The Relationship of Distributed Expertise and Shared Leadership in New Product Development Teams: A Comparative Case Study

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Dedication

This study is dedicated to my strong and caring family. First, my husband, Bob, whose patience and support paved the way for me to achieve my dream. Without his assistance, I could not have balanced the requirements of this study with the demands of my profession. Also, I dedicate this work to my sons, Rob and Andrew, who demonstrate expertise in all that they do, and to my mother, Lucia Curti Milligan, who taught me the importance of learning.

I especially dedicate this work to the memory of my father, Ralph Milligan, who would have been so proud of my achievement. As a talented musician, his strong work ethic and belief in developing exceptional expertise were ideals he lived by.

Acknowledgments

Writing often begins with an inspiring idea, and the writings of Mary Parker Follett provided the inspiration for this study. Her idea that people follow those with expertise at a time when authors were describing authority figures as leaders was the spark that led to my interest. My desire to learn more about the influential power of expertise also came from my personal experience with teams. Teams have a prominent role in influencing the course of organizations. Understanding this leadership behavior within a team and its ability to recognize and utilize expertise is of personal interest.

It takes a team to achieve great goals, and reaching my personal goal in completing this study is no exception. I have many people to thank. First, several executives at my place of employment supported this endeavor: Daniel J. Toran, former president and chief operating officer, encouraged my interest to pursue a doctoral degree. When Dan retired, David O'Malley, chief financial officer, provided me with continued support. In addition, Kirsten Pedersen, vice president of operations, and Ray Caucci, vice president of product management, offered two teams to observe the planning and execution surrounding product development. The members of these teams, the Concept and Feasibility Team and the Tactical Team, were highly professional and welcomed me in their discussions. Suzanne Sturn and Errica Wolfe also share credit in assisting me when I needed their expertise to illustrate my concepts. They were always there for me and helped me overcome my personal anxiety to complete this work. I also would like to acknowledge Dr. Jeffrey Branch's role in influencing me to pursue this intellectual journey in the first place.

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Abstract of the Dissertation

The Relationship of Distributed Expertise and Shared Leadership
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As we interact within a broader economic environment, our understanding of the role of expertise needs to evolve to where the role of the leader and expert are not necessarily synonymous. Knowledge-based work relies on expertise, and organizations depend more on knowledge workers than on singular leaders. Dimensions such as task interdependence and the sharing of responsibility lay the groundwork for expertise to play an important role in new product development. To better understand how expertise and shared leadership occur in a team setting and how they relate to each other, teams of product experts offered contexts for study. This comparative case study describes how leadership is shared and expertise is distributed in team interaction to facilitate new product development.

During this research, it was discovered that expertise is displayed as team behavior. For instance, when the content of the subject matter was easily understood by most team members, social influence was displayed more prominently in team interaction. However, when the topic was highly complex, team members deferred to the expert in the team. Due to their interdependency, team members operated in a symbiotic manner as they relinquished opportunity to present their own opinions and ideas to receive valuable input from their more expert peers. Therefore, deference was triggered by the content and complexity of the subject matter. The second conclusion concerned the evidence of one's expertise over time. Trusting relationships formed from the evidence of expertise and not the status one's role represented. The third conclusion

suggested presenting facts with an emotionally powerful delivery was more influential than facts alone. However, emotions accompanying an opinion did not have the same effect as emotions accompanying facts from an expert.

Other findings included the role of humor, which helped steer the team through highly technical conversations where individual team members were challenged by the complexity of the dialogue. Humorous exchanges set the stage to socially reconnect and leverage each other's unique expertise to advance shared objectives. Overall, this study presents shared leadership and distributed expertise as two sides of the same coin—as two facets of team influence.

Table of Contents

Page

Dedication ..... **iii**

Acknowledgments ..... **iv**

Abstract of the Dissertation ..... **vi**

List of Figures ..... **xii**

List of Tables ..... **xiii**

CHAPTER 1: INTRODUCTION AND OVERVIEW **1**

Statement of the Problem 5

Conceptual Framework 7

Shared Leadership 8

Expertise 9

Task Interdependence as Context 11

Interaction of Experts 11

Decision Quality and Commitment as Outputs 12

Purpose of the Study 13

Research Questions 13

Significance of the Study 14

Summary of the Methodology 15

Limitations 15

CHAPTER 2: REVIEW OF THE LITERATURE **17**

Expertise 17

Individual Expertise 17

Team Expertise 22
Summary 27
Shared Leadership 27
Teamwork 28
Communication 30
Shared Leadership: More than a Team? 30
History of Shared Leadership 32
Empirical Studies on Shared Leadership 36
Summary 39
Task Interdependence 41
Expertise and Team Decisions 43

CHAPTER 3: METHODS AND ANALYSIS 49

Research Design 49
Research Site and Participants 51
Data Collection 53
Meeting Observations and Transcripts 53
Interviews 54
Summary 55
Data Analysis 56
Strength of Methodology 58
Credibility 58
Transferability 59
Dependability 59

Confirmability 59
Limitations 60
Summary 60

CHAPTER 4: FINDINGS 61
Team Formation, Operation, and Demographics 62
Concept and Feasibility Team 62
Tactical Team 68
Research Question 1: Concept and Feasibility Team 71
Expertise 71
Shared Leadership 86
Summary of Findings for Research Question 1 93
Research Question 2: Concept and Feasibility Team 96
Relationship Between Complexity and Humor 96
Limitation of Idea Generation by Risk Avoidance 98
Summary of Findings for Research Question 2 99
Research Question 1: Tactical Team 100
Expertise 101
Shared Leadership 108
Summary of Findings for Research Question 1 114
Research Question 2: Tactical Team 116
Topic Complexity and Team Response 116
Knowledge Limitation Related to Prolonged Discussions 118
Expertise Versus Trust 119

Summary of Findings for Research Question 2 120

CHAPTER 5: DISCUSSION, CONCLUSIONS, AND IMPLICATIONS OF MAJOR FINDINGS 123

Discussion of Findings 125

Mission by Team 126

Temporal Framework by Team 129

Technical Complexity by Team 132

Collective Agreement, Collective Disagreement, and Task Coordination 137

Risk Exposure by Team 139

Role-Based Expertise 141

Cognitive-Based Trust 142

Relationship Between Shared Leadership and Distributed Expertise 144

Conclusions 149

Limitations of the Study 152

Implications for Research, Theory, and Practice 152

Research 152

Theory 154

Practice 155

REFERENCES 157

APPENDIX A: Definition of Key Terms 174

APPENDIX B: Codes Used in Data Analysis 175

APPENDIX C: Interview Questions 179

List of Figures

Page

1.1 The Study's Conceptual Framework 8

1.2 The Intersection of Leadership and Expertise 11

5.1 Team Interaction as Distributed Expertise.....134

5.2 Team Interaction as Shared Leadership.....138

5.3 Interactions of the Concept and Feasibility Team Showing the High Reliance on Distributed Expertise, which Led to Shared Leadership 148

5.4 Interactions of the Tactical Team Showing Shared Leadership and the Occasional Reliance on Distributed Expertise.....149

List of Tables

Page

2.1 Key Literature on Individual Expertise....21

2.2 Key Literature on Team-Level Expertise 26

2.3 Key Literature on Shared Leadership 39

2.4 Key Literature on Task Interdependence....43

2.5 Key Literature on Expertise and Team Decisions 47

3.1 Summary of Data Collection for Both Teams 56

3.2 Stages of Analysis....57

4.1 Demographic Characteristics of the Concept and Feasibility Team....64

4.2 Demographic Characteristics of the Tactical Team....70

4.3 Concept and Feasibility Team: Competitive Intelligence Segment 10/6/2009 72

4.4 Concept and Feasibility Team: Competitive Intelligence Segment 11/3/2009 73

4.5 Concept and Feasibility Team: Product Design Segment 8/11/2009 75

4.6 Concept and Feasibility Team: Product Design Segment 8/11/2009 75

4.7 Concept and Feasibility Team: Product Design Segment 8/11/2009 76

4.8 Concept and Feasibility Team: Product Design Segment 12/1/2009 78

4.9 Concept and Feasibility Team: Product Design Segment 11/3/2009 80

4.10 Concept and Feasibility Team: Creative Exploration Segment 12/1/2009....87

4.11 Concept and Feasibility Team: Creative Exploration Segment 8/11/2009....88

4.12 Concept and Feasibility Team: Collective Agreement Segment 11/3/2009....89

4.13 Concept and Feasibility Team: Collective Agreement Segment 2/9/2009....89

4.14 Concept and Feasibility Team: Disagreement Segment 8/11/2009....90

4.15 Concept and Feasibility Team: Disagreement Segment 8/11/2009....91

4.16 Concept and Feasibility Team: Summary of Themes for Research Question 1 96

4.17 Concept and Feasibility Team: Complexity-Humor Segment 12/1/2009.....97

4.18 Concept and Feasibility Team: Complexity-Humor Segment 8/11/2009.....97

4.19 Concept and Feasibility Team: Complexity-Humor Segment 8/11/2009.....98

4.20 Concept and Feasibility Team: Summary of Themes for Research Question 2 ..100

4.21 Tactical Team: Expertise Segment 6/10/2009 101

4.22 Tactical Team: Delivery of Product Specifications Segment 7/22/2009.....102

4.23 Tactical Team: Product Status Segment 6/10/2009 103

4.24 Tactical Team: Product Status Segment 7/22/2009 104

4.25 Tactical Team: Product Status Segment 6/10/2009 105

4.26 Tactical Team: Protocol Segment 7/15/2009.....108

4.27 Tactical Team: Protocol Segment 6/10/2009.....109

4.28 Tactical Team: Collective Agreement Segment 7/15/2009 110

4.29 Tactical Team: Collective Disagreement Segment 6/10/2009.....110

4.30 Tactical Team: Collective Disagreement Segment 6/17/2009.....111

4.31 Tactical Team: Collective Disagreement Segment 6/17/2009.....112

4.32 Tactical Team: Themes for Research Question 1 116

4.33 Tactical Team: Complexity-Oversimplification Segment 7/22/2009.....117

4.34 Tactical Team: Knowledge Limitation Segment 6/17/2009 119

4.35 Tactical Team: Themes for Research Question 2 122

5.1 Team Reaction When Expertise Is Insufficient 137

5.2 Distributed Expertise as Team Behavior 147

CHAPTER 1:

INTRODUCTION AND OVERVIEW

This study explored how the dynamic interaction within two new product development teams in a life insurance company was facilitated when elements of task interdependence, distributed expertise, and shared leadership were present. Understanding the roles of expertise and shared leadership as they relate to team interaction informs shared leadership theory (Bligh, Pearce, & Kohles, 2006; Cox, Pearce, & Perry, 2003; Friedrich, Vessey, Schuelke, Ruark, & Mumford, 2009; Ilgen, 1999; Pearce, 2004; Pearce & Conger, 2003). In fact, scholarly writing concerning leadership has been shifting away from the traditional focus on the individual and towards the collective (Bligh et al., 2006; Fletcher & Kaufer, 2003; Pearce, 2004; Pearce, Manz, & Sims, 2009; Small & Rentsch, 2010). However, studies on microprocesses within social interaction have not received much attention in the leadership literature (Fletcher & Kaufer, 2003; Bligh et al., 2006), as studies have focused primarily on teams at a macro level to determine how teams link to organizations (Ilgen, 1999). The unit of analysis for this study was team interaction.

While there has been some research on new product development teams, there has not been a sufficient number of studies to understand how leadership is shared in that context (Cox et al., 2003). Recent studies of shared leadership have addressed the topic of roles, problem solving, delegation, and team dynamics (Bechky, 2006; Bigley & Roberts, 2001; Cox et al., 2003; Klein, Ziegert, Knight, & Xiao, 2006; Kramer, 2006; Murnighan & Conlon, 1991) and have referred to knowledge in shared leadership teams (Bligh et al., 2006; Cox et al., 2003), but they have not specifically examined team interaction through

the perspective of expertise. Findings from earlier research on shared leadership (Bechky, 2006; Bigley & Roberts, 2001; Cox et al., 2003; Klein et al., 2006; Kramer, 2006; Murnighan & Conlon, 1991) have suggested that the basis for and the interactions between shared leadership and the distribution of expertise need exploration.

The focus of this study was the roles of shared leadership and expertise in two teams and how these roles were manifested in team interactions. The research concerned new product development teams in a life insurance company where there was a reliance on the use of teams to facilitate new product development. This study proposes that in this team of peers organized to communicate, generate ideas, and use its expertise to form decisions about strategic product development, the interactions would represent shared leadership practices and the distribution of expertise. The site for this study was a mid-sized life insurance company situated in the Philadelphia area. The company holds over $18 billion in assets and nearly $2 billion in total revenues. The employee population in the home office and field offices is over 1000 people, and approximately 10,000 financial professionals sell this company's products. For confidentiality purposes, this life insurer remains unnamed in this study.

Over time, organizations have moved towards a flatter structure and, as a result, have needed to find more creative ways to solve complex problems (Bligh et al., 2006). Therefore, a higher reliance on the team structure to achieve strategic objectives has become a norm. For the insurance company that was the site for this comparative case study, the formation of teams was an integral part of its culture and was practiced regularly to support nearly all company-wide initiatives. At the time of this study, two new product development teams were formed to leverage the diversity of expertise within

each team by task-interdependent team members. The expected results from these two new product development teams were that (a) they would generate ideas for high-quality products and (b) they would have a strong commitment to support the execution of the products proposed.

Though definitions of shared leadership have been evolving, the one used for this study was "a dynamic, interactive influence process among individuals in groups for which the objective is to lead one another to the achievement of group or organizational goals or both" (Pearce & Conger, 2003, p. 1; Pearce, Hoch, Jeppe Jeppesen, & Wegge, 2010, p. 151). It is noteworthy that in the literature, shared leadership is linked to knowledge by the presence of knowledgeable team members. Pearce and Sims (2000) noted that a form of shared leadership is bound to occur when there are group characteristics such as ability and group size, task characteristics such as complexity and creativity, as well as other environmental characteristics (p. 125). Pearce and Sims also pointed out that the opportunity for shared leadership is likely to increase when tasks become more complex. However, this concept does not sufficiently describe how an expert member of a team influences peers when the problem requires his or her specific expertise.

Shared leadership theory suggests that each team member's expertise is equal in authority to that of the other team members. In considering this framework, Pearce and Conger (2003) argued that team members "step forward to lead and step back for others to lead" (p. 2). Pearce et al. (2009) suggested that the one in charge is the one with the key knowledge, skills, and abilities. Then, when the knowledge requirements change, a new expert should "step to the fore" (Pearce et al., 2009, p. 234). However, it is not clear

how a team member leads with his or her expertise within a highly skilled team composed of other highly skilled members. In other words, it is not specified how lateral influence facilitates the utilization of the right kind of expertise at the right time.

This study accepted the notion of peer influence in the context of new product development teams and promoted the exploration of expertise within this context in order to understand situations in which each individual team member's expertise may not be equal in its authority. The sharing of knowledge as part of shared leadership implies that all the knowledge represented in the team is equally weighted. This study posited that different situations require differing expertise and the expertise that is called upon for a specific situation is distributed through team interaction. The research questions concerned how shared leadership and expertise occur and how they relate to one another in the context of new product development. For the purposes of this study, expertise was defined as specialized knowledge within a particular domain that is limited to a certain field and not easily transferable (Boster & Johnson, 1989; Chi, Glaser, & Farr, 1988; Zimmerman, 2006). Expertise is limited to specific domains of knowledge; therefore, people who are considered experts do not excel in domains where they have no expertise (Chi, 2006). As a result, experts who share the responsibility of a broad process such as new product development are considered task interdependent. What is not certain is how their expertise influences their interaction.

The literature on shared leadership and its related empirical studies defines expertise as a source of authority, but more empirical work is needed to know how it is manifested in a team where knowledge is applied (Drucker, 2002; Friedrich et al., 2009; Ilgen, 1999). While some experts do not perform effectively in team structures and are

more effective in hierarchies, the charge of new product development teams is to integrate expertise and influence through the interactions of its team members.

Statement of the Problem

Due to sharp competition over the last 4 years, life insurance companies have faced the problem of creating and delivering new products within an increasingly shorter time frame. This challenge has been intensified by the fact that the market for new products has become more consumer driven. Because global demographics are quickly evolving, insurers have had to react to more specific and more voluminous demands from customers and their financial professionals. In effect, the market has stressed the need for the right product at the right time. Therefore, companies have striven to respond to those demands with greater agility. This agility has become more important as companies must now face the need to make last-minute changes to product features as they approach critical deadlines.

The onset of the recession during the latter part of 2008 and the severity and magnitude of this financial crisis shook consumer confidence significantly. The subprime mortgage situation, foreclosures, and growing unemployment rates influenced the buying power of consumers. The uncertainty of insurance companies' solvency was heightened as a result of the bankruptcy of highly respected organizations such as Lehman Brothers and the government bailout of the nation's largest insurer, AIG. Naturally, these economic patterns raised questions about the safety of one's personal assets in insurers' investment vehicles. As the economic roadmap underwent significant changes, companies fell behind competitors, became irrelevant in the industry, and as a result, suffered severe economic consequences (McInturff, 2008).

However, new markets also offer opportunity. Typically, as new needs emerge, new product offerings are rigorously reevaluated, but to fully take advantage of the strength of being first to market, insurance company decision-makers need to become more innovative and comfortable with change. Organizations have to address the critical necessity of seizing market share by growing organically or face acquisition (acquire or be acquired). Growth becomes a priority as life insurers find ways to increase revenue, retain existing customers, and attract and hold on to their most prolific financial professionals. As a result, insurance companies have to decide which market is their focus and how to more rapidly bring to market the most innovative and relevant products (McInturff, 2008).

During this time period, the problem at hand was how organizations could operate optimally in a more intensely driven economic environment where timing of innovation played a significant role in the organization's survival. When it came to knowledge work, the collaboration of new product experts who swiftly shared their knowledge as part of the interaction for new product development was expected to make a difference in the company's success. The expertise contained in new product development teams had strong implications for how team interaction and new product development may have been influenced. Knowledge in the form of expertise was expected to play a role in the way interaction influenced the quality of and commitment to the development of new products. The quality of the new product's conception was expected to influence the team's commitment to its successful construction and implementation. Therefore, the problem in this study was the relationship between expertise and shared leadership in team interaction having to do with the new product development process. Existing

literature does not capture the dynamic nature of the team's interactions when the distribution of expertise and shared leadership are simultaneously in play. As a result, the conceptual framework for this study is outlined to further probe the relationship of distributed expertise and shared leadership in teams that are task interdependent and where the aim is to efficiently develop new, high-quality products together.

Conceptual Framework

Inspired by shared leadership theory (Cox et al., 2003; Pearce & Conger, 2003), a new conceptual framework was proposed to learn more about how shared leadership and expertise are utilized in teams where the members have equal authority in their organization. Figure 1.1 illustrates the relationship between expertise, shared leadership, team interaction, and the expected results of quality and commitment to new products. This conceptual frame is based on a team that is task interdependent, that is, working in an environment in which goal accomplishment requires completing related or dependent subtasks (Cox et al., 2003). Interaction signifies the discourse team members engage in when generating new ideas for new products. The framework's constructs of shared leadership, expertise, task interdependence, interaction, and decision quality and commitment as outputs are discussed briefly below and in more detail in chapter 2. Definitions of terms appear in Appendix A.

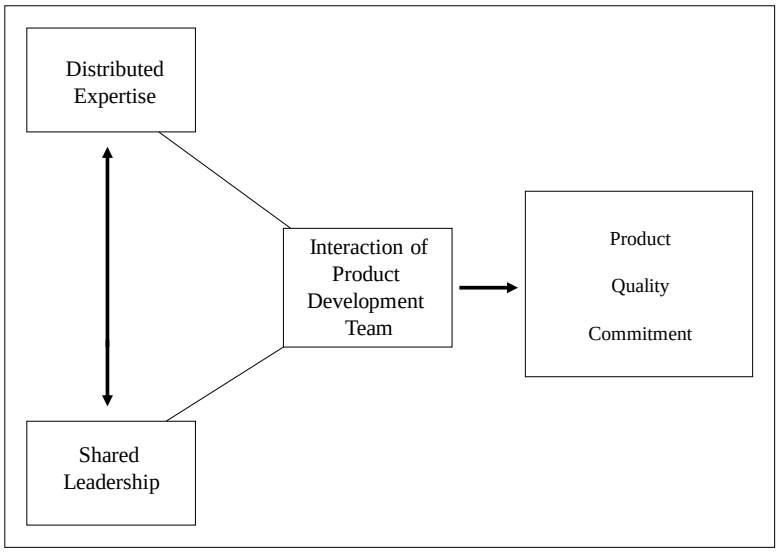

Figure 1.1. The study's conceptual framework.

Shared Leadership

Cox et al. (2003) pointed out that shared leadership goes beyond individual leadership capability, and they described shared leadership as "lateral influence among frontline development experts that is potentially better informed and more responsive to momentary task and leadership challenges" (p. 54). Shared leadership can be characterized as a collaborative, emergent process. According to Drath et al. (2008), shared leadership is "not the parsing out or alternation of leader-based influence, where the leader role passes from one individual to another, but a qualitatively different social process: interactive, collective influence" (p. 639). Shared leadership is defined as "a dynamic, interactive influence process among individuals in groups for which the objective is to lead one another to the achievement of group or organizational goals or both" (Pearce & Conger, 2003, p. 1; Pearce et al., 2010, p. 151).

To date, each of the empirical studies within the shared leadership literature has examined factors typified in traditional leadership literature such as roles, responsibilities, communications, expertise, delegation, and decision-making. In these studies, these elements were shared among multiple people who were working in a team framework. However, most of the studies were based on temporary teams that were disbanded when the assignment was completed rather than on more permanent teams (Bechky, 2006; Bigley & Roberts, 2001; Klein et al., 2006; Kramer, 2006). In addition, none of the studies was based on teams situated in an office environment.

Expertise

Expertise relates to one's knowledge, reasoning strategies, pattern recognition capabilities, and metacognitive abilities (Chi, 2006; Ericsson, 2006; Chi et al., 1988; Ericsson & Smith, 1991). According to Ericsson (2006; Ericsson & Smith, 1991), expertise is reached when skill is refined through practice over a long duration of time, such as 10,000 hours or at least 10 years. Expertise is specific to a domain and is generally limited to a certain field and not easily transferable (Boster & Johnson, 1989; Chi et al., 1988; Ericsson, 2006). Sternberg (1998) described domain as the knowledge base and field as the social organization of that knowledge base. Expertise relates to the "acquisition, storage and utilization" of explicit and implicit knowledge of a field, and it is the "knowledge of the facts, formulas, principles and major ideas of a domain of inquiry" (Sternberg, 1998, p. 13).

Dreyfus (1997) noted that expertise allows one to see "what needs to be done but decides how to do it" (p. 22). Therefore, those people who have expertise distinguish between scenarios that on the surface appear similar yet require different actions.

According to Cohen (1994), expertise is a group characteristic. Sharing expertise occurs when "team members share and listen to each other's knowledge and expertise" (Yeatts & Hyten, 1998, p. 45). All these scholars make reference to sharing expertise as a collective process. However, not enough is known about how one's domain of expertise affects information processing and group decision-making (Brodbeck, Kerschreiter, Mojzisch, & Schulz-Hardt, 2007).

Peter Drucker (2002) said that when the team is made up of experts, it is the team that makes the decision, not the rank of the individuals. In the context of this statement, this study focused on a process supported by a team that required its expertise to fulfill its purpose. As to the question of how expertise relates to team interaction and shared leadership, Drucker pointed out that knowledge must be "organized as a team in which the task decides who is in charge, when, for what, and for how long" (p. 289). According to Drucker, as the new economy consists of knowledge workers, it is knowledge itself that needs to be put to work. Thus, the role of expertise was studied to understand if expertise itself was distributed or assigned by authority. Further, the nature of leadership within the teams was observed to determine if autocratic leadership was present compared with shared leadership. These relationships led to a research design based on the model for leadership and expertise shown in Figure 1.2.

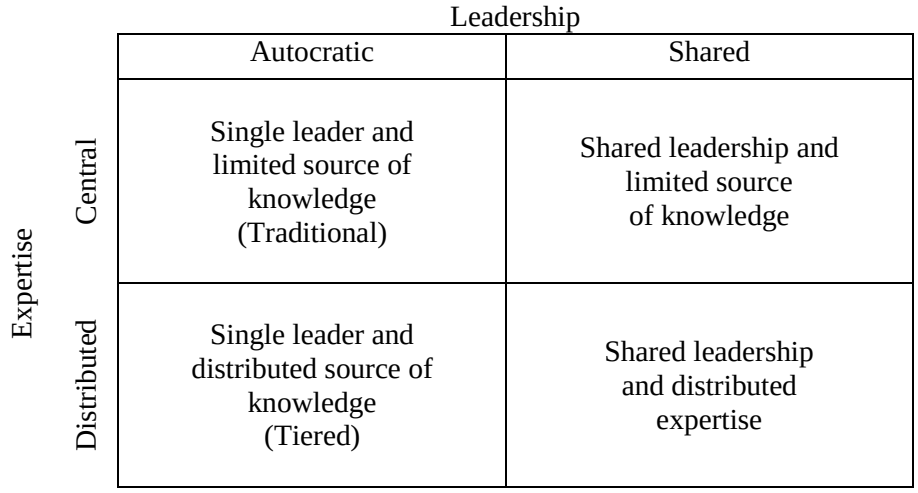

Figure 1.2. The intersection of leadership and expertise.

Task Interdependence as Context

More jobs are interdependent with other jobs than ever before (Ilgen, 1999). In addition, work in teams occurs more frequently in organizations with multiple departments (Devine, Clayton, Philips, Dunford, & Melner, 1999). Task interdependence is the reliance that team members have on each other as a result of common tasks that bring these team members together in a supportive manner. J. D. Thompson (1967) coined the term "mutual adjustment" to describe the action each specialist in a team has to make to "adjust his actions to the actions of others" (p. 62). In this context, task interdependence is the glue that binds the team members together as they work to reach a common goal.

Interaction of Experts

Interaction is found in shared leadership theory and is known as a "collaborative and emergent process of group interaction" whereby individuals become part of "peer leadership" while functioning as a team (Cox et al., 2003, p. 53). According to Schwandt

(2007), leadership involves "dynamic interactions of lateral influence among peer members of a group" (p. 55). As part of the process of sharing expertise, interaction is the conduit between team members that relates to verbal, written, and other nonverbal modes of communication such as body language (Yeatts & Hyten, 1998). With their theory, Yeatts and Hyten (1998) described the basic ingredients of interaction between individuals. When considering the communications conducted by multiple people in a team, Yeatts and Hyten's ideas suggest the great complexity of team interactions.

Bechky's 2006 study of temporary film-making teams linked high interdependence of tasks with successful execution of those tasks. This research pointed to the strong social pressure that ensured that everyone performed in their role and that the role structure and enactment helped to coordinate their work in spite of the temporary nature of their assignment. Klein et al. (2006) noted contexts such as emergency rooms, which warranted quick action and the proper expertise at the right time. The expectation was that individuals who performed in certain roles would interact in an intense and action-oriented manner.

Decision Quality and Commitment as Outputs

Vroom and Yetton (1973) identified quality and commitment as outcomes of team decision-making. Schwandt (2007) described decision-making as complex and noted dependent factors related to "consideration, necessary trade-offs, and the relative stability of different predictive factors in the probabilistic environment" (p. 15). Schwandt's model, which bridges structuring interactions as a meso-collective structure, illustrates a "reciprocal-ongoing interaction" between the structures of the collective and interaction of individuals (p. 15). Decision making is the way experienced people working together

in scenarios that are unpredictable, urgent, and fast-paced can identify and evaluate their circumstance and select alternatives that result in meaningful actions for each other and the organization (Zsambok, 1977; Orasanu, 1994).

Purpose of the Study

Various theories have attempted to explain the relationship between expertise and shared leadership. The purpose of this multicase study was to further examine those theories by analyzing micro-team interactions related to the generation of new product ideas. This research explored whether interaction was moderated by team members' expertise. Overall, the expectation was that this study would clarify and operationalize the role of distributed expertise in teams.

Research Questions

This study addressed two research questions:

1. How does distributed expertise and shared leadership occur in new product development teams?
2. How does distributed expertise relate to shared leadership in interactions within new product development teams?

The first question was posed to explore how distributed expertise and shared leadership were manifested during interactions within new product development teams. For instance, what words and actions provided evidence of their presence in team interactions? The second question concerned how distributed expertise relates to shared leadership. Distributed expertise appears to be linked to shared leadership by the way the team responds to team members who hold highly specialized knowledge in a particular

domain. The question inquires about the behaviors that demonstrate distributed expertise and shared leadership as related phenomena and how that relationship is manifested.

Significance of the Study

Organizations face new demands arising from resource diversity, virtual networks, time zone variability, and technological advances. Companies require greater speed to support core functions of decision making and execution. The quality and speed of any organization's response to new demands depend on its ability to quickly and accurately understand the issues.

Leaders are discovering that the knowledge required to lead successfully is challenging to manage. Recent history has placed tremendous pressure on individual leaders to adapt to the many changes that constantly unfold. A centralized leadership model, while useful in the past, has become less effective in more complex times. The more complex the task, the less likely it is a single person has the proper expertise to solve problems and make decisions.

Currently, there is no single theory that sufficiently explains the dynamic nature of team interaction when expertise and leadership are present. Because of this gap in the research, this study has significant implications. The result of this research offers a theoretical contribution, as it explains how expertise and shared leadership influence interaction and how they relate to the development of new products. In the complex world of practice, this research also makes a significant contribution as organizations search for more effective and efficient ways to achieve results. The implications of this study offer new thinking about the meaning of expertise as it relates to team interaction concerning product development.

Summary of the Methodology

This research is a qualitative study of the relationship of distributed expertise and shared leadership in the context of new product development teams where team members are specialized and task interdependent. This study was designed to better understand how peer influence and expertise play a part in the team's interactions. Observations and interviews were conducted with members of two separate new product development teams within a prominent life insurance company. A company site was identified, and information about the organization's history, strategy, organizational structure, meeting norms, and operational procedures was reviewed. The participants were professional adults who performed as actuaries and other senior-level experts in their organization in the areas of product development, marketing, and technology experience. Their expertise was derived from their formal education as well as years of experience in developing products in the insurance industry.

The data collection process began with observations and review of auditory recordings of meetings covering the product development process. Interviews and a review of meeting notes and charts of information were then used to triangulate findings. The research was conducted in a manner that described the full experience (Miles & Huberman, 1994). In this way, the entire group discussion was captured to discover what and how information that related closely to peer influence and expertise influenced team interaction leading to product development decisions made by the team.

Limitations

This comparative case study focused on new product development teams performing in a life insurance company. This case study compared and contrasted the

internal interactions of two teams—the Tactical Team and the Concept and Feasibility Team—that were unique yet related in their mission to produce new products. As a result of the teams' relatedness, several individuals were members of both teams, which could have posed a limitation to the study. It is possible that having a historical perspective of the Tactical Team's experiences could predetermine future actions taken by members of the Concept and Feasibility Team. Some team members' first-hand knowledge of the risks exposed at launch could have hampered the Concept and Feasibility Team's creativity during phases of future design. On the other hand, the holistic perspective of the entire product development process by the team members could have also had a positive influence in improving their success rate in the future.

As with any case study, the analysis attempted to generalize findings from this research to broader theory. Given the specificity of the research concerning the type of team (new product development) and a single company within the life insurance industry, the results of this study may not be generalizable to other fields. However, the study of two cases provided a more robust approach than a single case, which may make the findings more relevant. Internal validity is a concern when inferences are made as a result of input from interviews or documentation that may imply that an event occurred due to an earlier incident (Yin, 2003, p. 36). Effort, therefore, was made to question the validity of any conclusion drawn and to consider rival alternatives that may be more appropriate.

CHAPTER 2:

REVIEW OF THE LITERATURE

The problem addressed in this study was the relationship of team interaction with shared leadership and expertise as part of the new product development process. The purpose of chapter 2 is to review the empirical and theoretical literature associated with this problem. The following sections present a review of literature on the topics of task expertise (individually and in a team), shared leadership, task interdependence, and the relationship between expertise and team decision-making.

Expertise

More than ever before, organizations hoping to keep pace with rapid market demands must rely on expertise. Expertise allows problems to be solved quickly, which increases its importance (Larkin, McDermott, Simon, & Simon, 1980). An expert is someone "who performs at the level of an experienced professional" (Richman, Gobet, Staszewski, & Simon, 1996, p. 168). Chi (2006) defined expertise as the "manifestation of skills and understanding resulting from the accumulation of a large body of knowledge" (p. 167). However, expertise is more than holding large amounts of knowledge. Expertise relates to the ability to effectively organize the knowledge and to retrieve it efficiently (Sternberg, 1994). This section discusses both individual-level expertise and team-level expertise.

Individual Expertise

Several factors influence expertise at the individual level. After formal education, an individual is introduced into the professional realm and often works as a trainee until

proficient. According to Ericsson (2006), deliberate practice influences the acquisition of expertise. By definition, deliberate practice is an activity that is specific to improving performance in one's domain. Gladwell (2008) popularized the notion of the 10,000-hour rule noted in studies, where 10,000 hours of practice or 10 years of development was a common metric in expertise studies (Ericsson, 2009; Feltovich, Prietula, & Ericsson, 2006; Chi et al., 1988). According to Sternberg (1994, 1999), however, deliberate practice alone fails to explain the achievement of expertise. Sternberg proposed that abilities as well as experience lead to the development of expertise. Nevertheless, one cannot rule out the possibility that innate ability may encourage the propensity for deliberate practice leading to greater expertise.

Comparing experts' abilities to those of novices expands one's understanding of expertise. The difference between performance of experts and novices concerns the organization of their knowledge, reasoning strategies, pattern recognition capabilities, and metacognitive abilities (Chi et al., 1988; Ericsson & Smith, 1991). Performance rarely overlaps between novices and experts. When testing experts, it was determined that experts solve problems in their domain that novices cannot solve; if novices can solve the problems, experts can solve them more quickly. The reason for this is that novices work backwards from a problem while experts work forward (Simon & Hayes, 1976).

Working forward is also known as "forward reasoning," which is made up of a "chain of inferences" from information presented (Patel & Groen, 1991, p. 99). Backward reasoning is a result of developing a hypothesis and comparing it to known information (Patel & Groen, 1991). Because backward reasoning involves the use of subgoals and a higher dependency on memory, novices take longer to problem solve than experts.

Therefore, experts are more efficient, as forward reasoning is based on a "highly structured knowledge base and well developed pattern recognition capabilities" (Patel & Groen, 1991, p. 99). In the physics domain, not only do the experts have more knowledge, but such knowledge is better organized, which helps them represent physics problems "in terms of deeper theoretical principles" (Chi, Glaser, & Rees, 1982, p. vii). Without a strong knowledge base, any reliance on schema is "error prone" because there is an absence of an embedded process to confirm that the inferences made are reasonable (Patel & Groen, 1991, p. 98). It is noteworthy, however, that even experts will work backwards from the problem when it is complex. Wagner and Stanovich (1996) pointed out experts are in the top 5% of performers in their domain or are identified by the high number of standard deviations above the average performance (p. 191).

Experience is considered a catalyst when it comes to expertise development (Ericsson, 1996). At one time, it was thought that expertise dealt with general methods that relate to problem solving and decision making. Today, expertise is considered to depend on domain knowledge that is detailed and specialized (Ericsson, 1996, 2006; Holyoak, 1991). According to Eraut (1994), certain knowledge helps develop expertise, such as process or procedural knowledge (information), content knowledge (theories and principles), practical knowledge (know-how), and personal knowledge (experience). While experts perform at an outstanding level within their domain (Chi, 2006; Ericsson, 2006, 2009; Ericsson & Smith, 1991), expertise is specific to that domain and is generally limited to a certain field (Boster & Johnson, 1989; Chi et al., 1988). Studies have proven that when there is high proficiency in one domain, it is not easily transferable to another (Chi et al., 1988; Feltovich et al., 2006; Sternberg, 1999). Because expertise is not

transferable effortlessly, the distribution of expertise in team interaction is important when dealing with highly technical and complex subject matter.

According to Sternberg (1994, 1999, 2001), five domain-specific must interact for expertise to occur. They are metacognitive skills, learning skills, thinking skills, knowledge, and motivation. Sternberg also offered a comparison between expertise and abilities. Abilities are sometimes viewed separately from expertise but at other times as the precursor to expertise (Chi et al., 1998; Sternberg, 1998). Abilities are defined as a "form of expertise" in spite of the fact that historical literature on abilities and expertise has taken separate paths (Sternberg, 1998). Studies on abilities and expertise have had differing subjects (adults versus children), environments (work versus school), and methodology (correlation versus analysis of variance). Studies on expertise grew out of the cognitive psychology field, while studies on abilities stemmed from differential psychology. In the confines of previous studies, abilities were historically viewed as innate while expertise was viewed as acquired. Sternberg believes abilities can lead to expertise, and he provided examples of how expertise is manifested in people through organized networks of concepts—well-organized, highly interconnected units of knowledge—and by having schemas that contain elaborate problem-solving strategies. The triarchic theory states human abilities take the form of various informational processes based on mental representations at different levels of experience (Sternberg, 1988). Because expertise theory lacks the inclusion of the expert's analytical ability, Sternberg argued that experts have a propensity for analyzing new information while in the process of acquiring it. The elements of superior analytical ability include creative insightful solutions, automatization (the ability to perform with ease), and a practical

ability that provides the social context to navigate within a particular field. Table 2.1 presents major sources of the expertise literature in chronological order.

Table 2.1
Key Literature on Individual Expertise

Researcher(s)	Key findings
Follett (1924)	Follett's "law of situation" states that people follow those who hold special expertise.
De Groot (1966)	In this classic study, chess masters were able to recall 25 positions nearly perfectly after viewing boards for 5 seconds compared to less-experienced players who recalled 5-7 pieces.
Simon & Chase (1973)	The method of free recall was used to measure experts' recollection from their domain of expertise; results from experts were faster and more accurate.
Simon & Hayes (1976)	Experts solve problems in their domain that novices cannot solve. If novices can solve them, experts can solve them more quickly. Novices work backwards from a problem, while experts work forward.
Simon & Simon (1978)	The study compared the problem-solving skills of an expert and novice with equations used to solve physics problems.
Chi, Feltovich, & Glaser (1981)	Experts' domain is more principle based, and novices' representations are more situation or formula based.
Chi, Glaser, & Farr (1988); Ericsson & Smith (1991)	The difference between the performance of experts and novices concerns the organization of their knowledge, reasoning strategies, pattern recognition capabilities, and metacognitive abilities.
Ericsson & Smith (1991)	An expert is one who performs at an outstanding level within his or her domain.
Patel & Groen (1991)	Backward reasoning is a result of developing a hypothesis and comparing it to known information. The novice approach takes time as it uses subgoals and a higher dependency on memory. Experts are more efficient as they rely on a more methodical approach than novices. Forward reasoning is based on a highly structured knowledge base and well-developed pattern recognition capabilities. Without a strong knowledge base, any reliance on schema is "error prone" because of an absence of an embedded process to confirm that the inferences made are reasonable.
Sternberg (1994)	Expertise is a cognitive phenomenon, but the social conditions under which the label of expertise is granted must be considered; expertise involves both general and specific processes and the knowledge and ability to organize it (p. 11).
Klein, Wolf, Militello, & Zsambok (1995)	The first move of chess players is significantly better than chance, and error rates did not increase in blitz games compared to class C players, where error rates did increase.
Richman, Gobet, Staszewski, & Simon (1996)	An expert is someone "who performs at the level of an experienced professional" (p. 168).
Wagner & Stanovich (1996)	An expert is "someone who falls in the top 5% of performers in a domain" or by a "high number of standard deviations above the average performance" (p. 191).

Researcher(s)	Key findings
Sternberg (1996)	Domain is the knowledge base and field is the socialization of the knowledge base. Abilities and experience lead to the development of expertise.
Weick & Sutcliffe (2001)	When there are unexpected operating issues in a high-reliability organization (HRO), the "designation of who is the 'important' decision maker keeps changing based on the decision maker's specialty" (p. 74). In HROs, "expertise and experience is more important than rank" and expertise at any level of the organization is tapped to match the appropriate skill set with the problem at hand (p. 74).
Cianciolo, Matthew, Sternberg, & Wagner (2006)	An expert is someone whose level of performance exceeds that of most others.
Chi (2006)	"Expertise is the manifestation of skills and understanding resulting from the accumulation of a large body of knowledge" (p. 167).
Carson, Tesluk, & Marrone (2007)	Knowledge-based work relies on people who have "high levels of expertise" and "seek autonomy in how they apply their knowledge and skills" (p. 1217).
Ericsson (2009)	Expertise is the characteristics, skills, and knowledge that distinguish experts from novices and less experienced people (p. 3).
Dane (2010)	Inflexibility arises from a high degree of entrenchment that pervades experts' domain schemas (p. 594).

Team Expertise

Empirical studies of team-related expertise have been conducted (Stubbart, 1989) and cover areas as broad as chess, physics, music, sports, mathematics, and agriculture (Ericsson, 2006; Boster & Johnson, 1989; Chi et al., 1988). In these studies, the common thread is that teams yield to team members with the greatest expertise. This appears to be a voluntary process, in most cases, as team members have a mutual interest in reaching the best results. The team literature appears to be consistent with the conclusion that team members defer to those members with the greatest expertise rather than focus on role alone. This notion is reminiscent of Mary Parker Follett's (1924) early observation that people follow others who hold special expertise.

DeNisi, Hitt, and Jackson (2003) noted that knowledge-based work relies on people who are highly expert and who look for ways to independently apply their

knowledge. Salas, Rosen, Burke, Goodwin, and Fiore (2006) pointed out that "teams are dynamic entities which evolve over time during which they must master two tracks of skills: taskwork and teamwork" (p. 441). Salas et al. defined taskwork skills as based on knowledge and oriented towards performance, while teamwork skills are based on attitudes and behaviors that are translated into expert social interaction (Salas et al., 2006). These skills are necessary for the team to function interdependently, leading to "adaptive coordinated action" (Salas et al., 2006, p. 441).

Thomas-Hunt, Ogden, and Neale (2003) posited that the knowledge needed to complete organizational tasks is distributed across multiple individuals (p. 464). Thus, expertise is called upon when speed in decision-making is necessary. Speed is possible in the context of expertise, as experts are more efficient in their decision-making due to their reliance on their knowledge. Because expertise is not easily transferable (Boster & Johnson, 1989; Chi et al., 1988; Feltovich et al., 2006; Sternberg, 1999), it is especially important to select expert team members in cases where teamwork requires special knowledge. The team setting often influences the sharing of expertise from expert members with the total team. There are situations, however, when experts in a hierarchy are required to provide a more direct and autonomous influence such as from a leader-role perspective compared to freely contributing their knowledge as part of the overall team effort.

Team member reliance upon individual members' expertise is known as cognitive interdependence and is termed a *transactive memory system* (TMS). A TMS utilizes each member's memory sources that store, retrieve, and communicate knowledge (Akgun, Byrne, Keskin, Lynn, & Imamoglu, 2005). Team members perform as an external

memory bank for others. They "encode memories about the memories of others" and communicate them back to the team (Akgun et al., 2005, p. 1106).

Wegner (1987) made the observation that groups that work together for relatively long periods of time depend on each team member's expertise. Lewis (2003) noted that team members divide and conquer the various tasks based on their differing domains of expertise. In this manner, the members provide collective expertise for all the tasks presented. It is suggested that TMS provides an opportunity to solve problems and complete tasks more quickly as a result of coordinated access to expertise. TMS distributes responsibility among team members, increasing the amount of knowledge for each task (Lewis, 2003; Wegner, 1987).

Wegner (1986) noted that shared experiences result in groups sharing information that is relevant to the task at hand. Liang, Moreland, and Argote (1995) pointed out that TMS is both the knowledge inherent within individual group members and the recognition within the group of "who knows what" (p. 385). In addition, while there is variability in the knowledge and skills of individual team members, if these members are unaware of the expertise possessed within the team, they miss the opportunity to make use of it (Liang et al., 1995). However, if a TMS operates within the team, each member knows the "strengths and weaknesses" of his or her teammates, which facilitates the use of knowledge (Liang et al., 1995). Lewis (2003) also described TMS as a way for teams to leverage their individual members' differing expertise. TMS theory explains the facilitation of "quick and coordinated access to specialized expertise" when experts come together to work on a shared process (Lewis & Herndon, 2011). The value of cross-

functional teams can be realized only if members can utilize and integrate the expertise of members within the team (Nonaka & Takeuchi, 1995).

Liang et al. (1995) also described the factor of *task credibility,* which demonstrates how much trust group members have about each other's knowledge. Trust is a natural outcome as group members know "how much and what kind of information" each individual holds (Liang et al., 1995, p. 389). Related to the topic of credibility and trust are the writings of Chowdhury (2005) and Holton (2001), who offered the notion of trust in organizations where teams are relied upon to collaborate and make decisions in lieu of individual leaders. Trust has been regarded as a "collaborative dynamic" when there is "frequent and meaningful interaction (Holton, 2001, p. 36). Chowdhury distinguished types of trust and advanced that "cognitive-based trust" allows team members to seek knowledge from the members whom they trust based on their experiences working together (p. 301).

Studies related to knowledge management also shed light on team expertise. Borgatti and Cross (2003) asserted that expert status plays an important role in knowledge transfer among individuals. Thomas-Hunt et al. described expert status as a predictor of the type of information an individual shares with a group. Team members may achieve status due to their social connections within the team as well as their perceived expertise. Thomas-Hunt et al. (2003) demonstrated that information sharing depends on the team member's acceptance by the group and the type of expertise held by the individual. Team members who are more socially linked to other team members are less likely to share their "unique knowledge" than individuals who are not as socially integrated within the team (Argote, McEvily, & Reagans, 2003, p. 574). Stasser and Titus

(1985) provided research results in an earlier study that support the idea that specialized knowledge is less likely to be shared in group discussion than commonly held knowledge. Table 2.2 summarizes key literature sources about expertise at the team level.

Table 2.2
Key Literature on Team-Level Expertise

Researcher(s)	**Key Findings**
Vroom & Yetton (1973)	Expertise in the team is synonymous with knowledge stored in someone's head and contained in memory.
Stasser & Titus (1985)	Specialized knowledge is less likely to be shared in group discussion than generally held knowledge.
Wegner (1987)	Groups that work for longer periods of time depend on each team member's expertise.
Boster & Johnson (1989); Chi, Glaser, & Farr (1988); Ericsson (2006)	Expertise is specific to a domain and is generally limited to a certain field and not easily transferable. Empirical studies cover areas as broad as chess, physics, mathematics, and agriculture.
Stubbart (1989)	Study refers to empirical studies of expertise.
Holyoak (1991)	Expertise is considered to depend on domain knowledge that is detailed and specialized.
Eraut (1994)	Certain knowledge helps expertise, such as process or procedural knowledge (information), content knowledge (theories and principles), practical knowledge (know-how), and personal knowledge (experience).
Cohen (1994)	Expertise is a group characteristic.
Liang, Moreland, & Argote (1995)	Transactive memory systems (TMS) include knowledge within individuals as well as recognition of "who knows what" in the team.
Nonaka & Takeuchi (1995)	The value of cross-functional teams can be realized only if members can utilize and integrate the expertise of team members.
Ericsson (1996)	Experience is a catalyst when it comes to expertise development.
Klenke (1997)	Teams are involved in highly cognitive work and interactions.
Yeatts & Hyten (1998)	Sharing expertise occurs when "team members share and listen to each other's knowledge and expertise" (p. 45).
Argote, McEvily, & Reagans (2003)	Unique knowledge is less likely to be shared by socially connected team members.
Borgatti & Cross (2003)	Expert status plays an important role in knowledge transfer.
DeNisi, Hitt, & Jackson (2003)	Knowledge-based work relies on people who are highly expert and look for ways to independently apply their knowledge.
Ericsson (2003)	Expertise is a sequence of mastered challenges with increasing levels of difficulty in specific areas of functioning.
Fletcher & Kaufer (2003)	Expertise can be described in the context of shared leadership as shifting and spiraling around the collective.
Lewis (2003)	Team members divide and conquer tasks based on differing domains of expertise.
Lewis & Herndon (2011)	TMS improves team performance as it facilitates "quick and coordinated access to specialized expertise" (p. 1254).

Researcher(s)	Key Findings
Thomas-Hunt, Ogden, & Neale (2003)	Information sharing depends on a team member's acceptance by the group and the type of expertise held by the individual.
Friedrich, Vessey, Schuelke, Ruark, & Mumford (2009)	Collectives based on expertise require a dynamic nature which existing studies do not represent.
Salas, Rosen, Burke, Goodwin, & Fiore (2006)	Teams are dynamic entities that evolve over time during which they must master two tracks of skills: taskwork and teamwork. Both are necessary for the team to function interdependently, leading to "adaptive coordinated action."
Zimmerman (2006)	Expertise involves greater task knowledge and performance skill.
Gardner, Gino, & Staats (2012)	Knowledge integration capability generates joint contributions to understanding complex problems in a team.
Summers, Humphrey, & Ferris (2012)	Team member change causes flux in coordination and information transfer within a team.

Summary

There is evidence that individuals as well as teams hold special expertise and, as a result, are relied upon for their specialized knowledge. In the context of teams, people are known to rely on experts for problem solving and to voluntarily yield to individuals who demonstrate greater expertise in specific areas. The presence of expertise in teams is considered to be a factor in efficient decision-making. Expertise in a team can be compared to knowledge contained in one's memory (Vroom & Yetton, 1973). The literature that describes TMSs advances the idea that team members collectively contain a memory capability for one another that facilitates the utilization of relevant expertise when called upon.

Shared Leadership

This section reviews shared leadership as it relates to teamwork and communication. It then compares the theory of shared leadership with the literature on teams, provides a historical perspective on shared leadership, and discusses empirical studies in the area of shared leadership. The section closes with a summary.

Teamwork

Relying on collective talent is not a new concept. In the 1930s, Lewin carried out group studies and experiments, and his work championed the field of group and team research (Whyte, 1953). At that time, the theory of group dynamics rejected the traditional role of the individual group leader and promoted the effectiveness of many roles played within the group. In 1948, Kenneth Benne and Paul Sheats recommended that members rotate the responsibility of group and individual roles (Whyte, 1953, p. 5). Benne noted that working within a group provides alternatives that cannot be created by individuals alone (Smith & Berg, 1987). According to Whyte (1953), the group structure involved a blending of roles. When Whyte experimented with leaderless groups, one of the group members informed the researchers that "group methods of thinking and problem solving are superior to individual methods of thinking and problem solving" (p. 43).

However, not everyone believed in the effectiveness of teamwork. According to Cartwright and Zander (1960), there was a divergent view of group process from people who believe that "groups demand blind conformity, they encourage mediocrity, they generate repressive dependency, and they cling stubbornly and irrationally to the status quo" (p. 34). C.G. Jung presented a similar depiction of group process: "When a hundred clever heads join a group, one big nincompoop is the result, because every individual is trammeled by the otherness of the others" (Cartwright & Zander, 1960, p. 34). Although there is always the risk for "groupthink" (Janis, 1972) and mediocrity, half a century later companies capitalize on the collective knowledge of their employees through group process.

Katzenbach and Smith (1993) discovered that teams were more involved in peer influence; in addition to their common purpose, they "hold each other fully and jointly accountable" for their results (p. 21). Multiple minds can lead to a group process or structure that can yield better ideas than can be inspired from a single source. Some of the benefits of teamwork include new ideas, a commitment by the team, and speed of execution (Katzenbach & Smith, 1993).

For a team to work effectively, its members must have the "requisite ability, knowledge, and skill to perform the task" (Thompson, 2000, p. 20). Groups should have technical abilities and also interpersonal and decision-making skills (Thompson, 2000). According to Levi (2001), teams have a variety of leadership types, such as leaderless groups, leaders assigned by management or by the teams themselves, and self-managing teams. He added that a team could share and rotate the role of leader until a leader emerged. According to Brodbeck et al. (2007), organizations have redesigned positions to increase task interdependency and teamwork. There is an expectation that decisions made by groups composed of diverse expertise are superior to decisions made by individuals. One of Brodbeck et al.'s findings is that learning from team members' expertise through group interaction leads to high-quality decisions. Examples of successful companies that chose teams to carry out critical responsibilities include General Electric, Google, and Toyota (Katzenbach & Smith, 1993; Pearce & Conger, 2003).

In summary, the team literature informs us that better ideas come from multiple members of a team compared to an individual. It suggests that teams set the stage for the expertise of the many to be shared through group interaction and that it is through this group interaction that high quality decision-making is achieved.

Communication

Communication fosters emergence in organizations. Plowman and Duchon (2007) asserted that fostering conversations in organizations leads to "strong, rich connections" that set the stage for emergence (p. 124). Weick (1995) noted the importance of conversation in organizations, as "people talk in order to see what they think" (p. 184). Gardner, Gino, and Staats (2012) asserted the need for a "reliable pattern of team communication" that results in contributions made by the entire team to understand complex problems (p. 999). According to Gardner et al. (2012), contributions that are provided jointly create a knowledge integration capability within a team.

Shared Leadership: More than a Team?

Shared leadership is reminiscent of the team construct. Literature about teams informs scholars about leadership, as teams become more prominent as organizations downsize (Avolio, Sivasubramaniam, Murry, Jung, & Garger, 2003). While teams have their success stories to share, particularly in the areas of empowerment, interdependence, and consensus building, not all teams are successful (Katzenbach & Smith, 1993; Pearce & Conger, 2003). There is a view that poor leadership in teams leads to disappointing results.

Characteristically, team literature contains very little information about "leadership" itself. Rather, the literature speaks to the individual leader and not the leadership displayed by the team. This gap may be a result of the perspective that leadership is an individual phenomenon and not relevant in literature about teams (Avolio et al., 2003). Is shared leadership a type of leadership or a form of teamwork? To begin to answer that question, not all leadership is shared, nor is every team a form of collective

leadership. Avolio et al. (2003) made a significant contribution by clarifying the nature of shared leadership and noting the difference between leadership by the team as led by a team leader compared to leadership of the team that comprises team members working as joint leaders.

Leadership literature tends to focus on the individual and leave out topics that can be derived from research conducted on teams. More recently, the topic of empowerment has made its way into articles dealing with leadership (Conger & Kanungo, 1988). It is noteworthy that in teamwork, empowerment is one of the earliest concepts organizations introduce into the workplace. Empowerment occurs as leaders share their power with others; it is not yet self-empowerment by employees but empowerment bestowed by authority itself.

Cox et al. (2003) stated that shared leadership is a phenomenon that "reaches beyond the limits of individual leader capability through lateral influence among frontline development experts that is potentially better informed and more responsive to momentary task and leadership challenges" (p. 54). The reference to "momentary challenges" characterizes the transitory nature of the needs and requirements of the team members. While shared leadership has similarities to the team construct, it focuses more on the leadership behaviors that are shared by the team members. Earlier literature described shared leadership as a planned process of assigning key experts to roles within the team, and it can emerge naturally. In this context, shared leadership is linked to the emergence of multiple leaders over the life of the team. More recent literature describes shared leadership as "not the parsing out or alternation of leader-based influence . . . but as an interactive collective influence" (Drath et al., 2008, p. 639).

On the surface, self-managing work teams may appear to be the same concept as shared leadership. However, according to Pearce and Conger (2003), self-managing teams do not examine the process of leadership as shared by the team or its effects. According to Avolio et al. (2003), there have not been many attempts to scrutinize leadership as a group construct. There is a need to study leadership "by and of the group" (Avolio et al., 2003, p. 145). If leadership is a social influence process, then it is operationally defined at the individual or group level of analysis. One can construe that shared leadership is not so much a differing leadership model but a vehicle to increase expertise to facilitate decision-making and action (Pearce & Conger, 2003). While the literature often refers to the emergence of leaders, Pearce et al. advocated that the shared leadership process is made up of rotating leadership assignments based on skills and knowledge needed at the time. For this study, the definition of shared leadership is "a dynamic interactive influence process among individuals in groups for which the objective is to lead one another toward the achievement of group or organizational goals or both" (Pearce et al., 2009, p. 234).

History of Shared Leadership

Mary Parker Follett (1924) was the first scholar to refer to a shared leadership approach. She called it the "law of situation," as it implied following knowledgeable people rather than the person in authority. Her ideas went by the wayside as hierarchical leadership continued to draw attention.

The next time shared leadership surfaced was in the report by Bowers and Seashore (1966), who coined the term *mutual leadership,* which suggested that leadership comes from peers. In an earlier study Bowers and Seashore (1966) referred to, they had

determined a statistically significant positive correlation between managerial leadership and peer leadership. The findings demonstrated that seven of the eight leadership characteristics played a part in the predictive model. For instance, the best predictor of peer support was managerial support, and a strong correlation existed between peer work facilitation and managerial work facilitation. In other words, in the context of that study, peer and leadership characteristics seemed equally important and influential over one another. According to Pearce and Conger (2003), other contributions related to shared leadership, such as studies of human relations (Mayo, 1933; Turner, 1933; Barnard, 1938; Whyte, 1948), role differentiation (Benne & Sheats, 1948), co-leadership (Solomon, Loeffer, & Frank, 1953), social exchange and emergent leadership (Hollander, 1961), management by objectives (Drucker, 1954), and participative goal setting (Drucker, 1954).

Katz and Kahn (1978) pointed out the benefit of sharing the leadership function, as it led to a greater use of the organization's resources and avoided overburdening the same resources. Also noted was "the exertion of influence on organizationally relevant matters by any member of the organization" (Katz & Kahn, 1978, p. 571), which resulted in organizational effectiveness due in part to the quality of the decisions made. More recently, research and theoretical writing relating to shared leadership has become more apparent and continues to evolve.

Another form of collective leadership theory is distributed leadership. Klenke (1997) developed a model of distributed leadership in high-performing information systems teams. Klenke noted that these teams are involved in highly cognitive work that requires continuous learning and interaction. Gronn (2002) referred to the sharing of

leadership in terms of "distributive" leadership. He posited that there is a distributive pattern, and it is "well aligned with processes through which work is currently articulated as part of an emerging and ever changing division of labor" (p. 425).

Various authors such as Pearce and Sims (2000) found shared leadership to be an important predictor of team effectiveness. A "sequence of conditions must hold for shared leadership to emerge," such as constructive lateral influence, acceptance of responsibility to provide and respond to leadership from peers, and the development of skills as leaders and followers (Cox et al., 2003, p. 53). Pearce and Conger (2003) described shared leadership as "the logical extension of the expanded decision-making authority that characterizes truly empowered teams" (p. 53). Further, they said that shared leadership is a "collaborative and emergent process of group interaction" that leads to lateral influence by individuals who become part of "peer leadership" while functioning as a team (Pearce & Conger, 2003, p. 53). These descriptions focus squarely on the interactive and influential aspects of the team members.

Cox et al. (2003) asserted that shared leadership is especially effective when task interdependence and task complexity exist or when creativity is called for in a situation. Cox et al. (2003) suggested that shared leadership is effective in processes such as product development where expert knowledge workers make up a team.

Fletcher and Kaufer (2003) investigated expertise within the context of shared leadership. According to Fletcher and Kaufer, expertise can be described in the context of shared leadership as *fluid expertise* which shifts and spirals around the collective regardless of hierarchy. In this manner, there is an implied relationship between shared leadership and expertise. In the knowledge creation process, overreliance on a single

resource raises risk for the organization. The shared leadership model is appropriate and can contribute towards furthering team expertise.

Pearce and Sims (2002) noted that when a group characteristic such as ability and a task characteristic such as complexity come together, there is a greater opportunity for shared leadership to increase. Shared leadership is appropriate when knowledge workers share tasks or responsibilities (Pearce, 2004).

A great deal of published studies that analyze the sharing of leadership are available and support the viability of a collective leadership approach (Bligh et al., 2006; Drath et al., 2008; Fletcher & Kaufer, 2003; Friedrich et al., 2009; Pearce, 2004; Pearce & Conger, 2003; Pearce & Sims, 2002). Yukl (2006) noted that leadership is questioned whether it is a specialized role or a "shared influence process" (p. 3). If shared, it is diffused among individuals within a social system. Likewise, Schwandt (2007) said that leadership is developing into a "more inclusive process" that involves "dynamic interactions of lateral influence among peer members of a group" (p. 55). More recently, Weibler and Rohn-Endres (2010) provided findings on interorganizational networks. In short, leadership is beginning to be viewed not merely as a role but as a process of influence.

In contrast to ideas about hierarchical leadership, there is a common basis for shared leadership, teams, and empowerment. The definition of shared leadership has a clear message that the members do whatever is required to reach their potential—with an implication of spontaneity. However, it is not entirely understood how influence manifests itself in the dynamics of a group (Pearce & Conger, 2003). Nor is enough known in the shared leadership literature about how expertise influences leadership.

Acknowledging that gap, Pearce and Conger (2003) called for a multidirectional model where the process of influence improves an organization's effectiveness and increases individual self-efficacy—"one that takes full advantage of knowledge, skills and abilities of all workers whatever their organizational level" (p. 286).

Empirical Studies on Shared Leadership

In their research, Klein et al. (2006) explained the process of shared leadership in an extreme action setting. They observed activity in the Trauma Resuscitation Unit (TRU) to learn how leadership adapts when the composition of the team changes. When asked who the leaders were, the participants in this study referred to three specific roles rather than the names of the individuals who served in those roles—since different specialists performed in those roles due to their rotational work schedule. The expertise required for the role manifested more importance than the person who filled that role. Specialists assigned to specific roles were described as sharing leadership as they fulfilled duties defined by those roles.

Sharing responsibility is another aspect of shared leadership. In the study by Klein et al. (2006), the trauma center focused on stabilizing, diagnosing, and treating patients quickly, as errors or delays could have serious ramifications for the patient. Klein et al. described a process of "dynamic delegation," which fostered reliable performance and individual learning (p. 605). The leaders routinely "passed the baton" to the more junior staff members to take charge until circumstances demanded that a more senior member take over. The authors determined that leadership varied depending on the confidence held by the team members as well as the confidence held by the leader who may have had to correct an error made by a junior member. However, the question remains: What

influence does the expert individual play in a team, and are researchers today scrutinizing this variable sufficiently?

At the end of their research, Klein et al. (2006) concluded that shared leadership was present: "TRU team leadership is invested in multiple positions; it is shared, invested formally in three key positions" (p. 599). They compared the leadership in the TRU to the more informal and emergent form of shared leadership described by Pearce and Conger (2003). They posited that while TRU team leadership is shared, it is rarely shared simultaneously, as illustrated by "dynamic delegation" (p. 602). Contexts such as emergencies warrant quick action and the proper expertise at the right time. The expectation is that individuals who perform in certain roles will interact in an intensive and action-oriented manner.

In other studies, researchers have observed leadership and group dynamics that supported and, in some cases, detracted from the level of performance. A study by Murnighan and Conlon (1991) attempted to determine how leadership was shared among string players. The study also described a paradox, as musicians who were seemingly democratic yielded to the leadership role of the first violinist. It was determined that the role of the first violinist included being the final decision-maker when there was a lack of consensus. On the surface, this singular leadership role appears to contradict the shared leadership concept. Is this finding really a contradiction or is it a clear example of what Pearce (2004) described as the coexistence of shared leadership with traditional elements of leadership? Pearce and Conger (2003) and Locke (2003) discussed the tension of vertical and shared leadership and asserted that there is a time for the final say to be made by the one in charge. Murnighan and Conlon described how the musicians depended on

one another. While their leadership was described as shared, the study concluded that the more successful groups relied on the principal violinists' final decision. In addition, quartets that practiced a more democratic approach were in the bottom group of quartets ranked by performance. The research further concluded that the more successful quartets operated with the first violinist having the decision-making power, a more directive style of leadership. Are the quartets more successful because one musician has greater power than all the rest? Perhaps one should look more closely at why it is the first violinist who holds this responsibility over the other members. It is common knowledge that the principal violinist is awarded the position based on superior virtuosity. The research notes that the second violinist's role is to echo rather than lead the first violinist in the melody. As the roles are differentiated, it is predictable that the principal violinist has a higher level of expertise than that of the other team members and the first violinist's opinion will take precedence. Murnighan and Conlon, Pearce and Conger, and Locke seem to characterize the final decision-maker as a throwback to directive-style leadership when "the final say" may concern not so much who is in charge but who has the expertise to make the final decision.

More recently, Small and Rentsch (2010) operationalized shared leadership to determine the quantity of leadership in teams and the "distribution" of leadership among team members (p. 203). In their longitudinal study, they found that shared leadership requires team members to understand each other's skills to be successful. The study revealed that shared leadership increased over time, therefore concluding that shared leadership is displayed more effectively in mature teams where team members have a greater understanding of each other's skills and abilities. A more recent quantitative study

by Bergman, Rentsch, Small, Davenport, and Bergman (2012) posited that shared leadership equates to the number of team members who engage in leadership behaviors. Another one of their findings included that shared leadership increased the understanding of decisions even if the team was not fully satisfied with the decisions. Bergman et al. (2012) interpreted this finding as "cognitive acceptance of decisions, with a lesser impact on affective acceptance" (p. 31).

Summary

Table 2.3 presents in chronological order a summary of the various scholars' theoretical or empirical contributions related to shared leadership. This literature is important because it offers the perspective that leadership is a group phenomenon shared by individuals who interact together in a group setting. The various empirical studies cited provide a better understanding of the different ways shared leadership contributes towards time-sensitive decision-making. Overall, the studies bore out that even when experts do not know each other and have not worked together previously, their interdependency and expertise contribute to decisions that are timely and of high quality.

Table 2.3
Key Literature on Shared Leadership

Researcher(s)	Key findings
Follett (1924)	The "law of the situation" implies following knowledgeable people rather than the person in authority.
Benne & Sheats (1948)	They recommended that team members rotate the responsibility of role that pertained to group tasks, group building and maintenance roles, and individual roles. Terms such as "initiator-contributor," "encourager," "harmonizer," "aggressor," "blocker," and "recognition seeker" were used for each role.
Bowers & Seashore (1966)	"Mutual leadership" suggests that leadership comes from peers. An earlier study determined a statistically significant correlation between managerial leadership and peer leadership.

Researcher(s)	Key findings
Katz & Kahn (1978)	Sharing the leadership function leads to a greater use of the organization's resources and avoids overburdening the same resources.
Murnighan & Conlon (1991)	Shared leadership in quartets that involves the first violinist making final decisions is due to role and expertise.
Pearce & Sims (2000)	Leadership is an important predictor of team effectiveness.
Gronn (2002)	Distributive leadership is "well aligned with processes through which work is currently articulated as part of an emerging and ever changing division of labor" (p. 425).
Avolio, Sivasubramaniam, Murry, Jung, & Garger (2003)	There is a need to study leadership "by and of the group" (p. 145).
Cox, Pearce, & Perry (2003)	Shared leadership reaches further than vertical leadership as a result of the effectiveness of lateral influence among key experts. The concept of shared leadership is effectiveness of lateral influence among key experts**.**
Pearce & Conger (2003)	Shared leadership is a "collaborative and emergent process of group interaction" where individuals become part of "peer leadership" while functioning as a team (p. 53).
Spillane (2005)	The distributive perspective defines leadership as interactions between people and their situation (p. 144).
Bligh, Pearce, & Kohles (2006)	A theoretical model of self and shared leadership, trust, potency, and commitment may lead to innovative knowledge creation (p. 296).
Klein, Ziegert, Knight, & Xiao (2006)	In a trauma unit, expertise in key roles was more important than the persons who filled the role based on their rotational schedule. The term *dynamic delegation* was coined to describe when senior member passed the baton to junior staff members until they were in a position where the more senior person took over the responsibility.
Yukl (2006)	Leadership is questioned, whether it is a specialized role or a "shared influence process" (p. 3).
Schwandt (2007)	Leadership is developing into a "more inclusive process" that involves "dynamic interactions of lateral influence among peer members of a group" (p. 55).
Gronn (2009)	Leadership is "not a case of either/or, but that both leadership understandings, individual and collective count" (p. 383).
Pearce, Manz, & Sims (2009)	Successful nonprofit and for-profit organizations were identified who operationalized shared leadership (p. 234).
Manz, Manz, Adams, & Shipper (2010)	A theoretical model tied shared leadership to corporate social responsibility (p. 212).
Small & Rentsch (2010)	Distribution of leadership behavior defines shared leadership (p. 209).
Weibler & Rohn-Endres (2010)	Shared network leadership emerges from collective processes linked to relational microprocesses interacting with a network context (p. 192).
Bergman, Rentsch, Small, Davenport, & Bergman (2012)	Empirical research on shared leadership demonstrated its link to team effectiveness. Teams that practiced shared leadership reported less conflict, greater consensus, and higher intragroup trust and cohesion.

Task Interdependence

Task interdependence plays a significant role in shared leadership. The interdependency among team members on tasks and expertise binds the team members together in a supportive manner. When a team is interdependent, there is an exchange of information between team members while they work on common tasks. When team members are interdependent, a high degree of coordination is needed to ensure their collective work is successfully accomplished. J. D. Thompson (1967) referred to "mutual adjustment" as a means for team members to coordinate with one another (p. 62). Thompson provided a noteworthy example in a 10-man team of specialists who operated aircraft; each specialist had to "adjust his actions to the actions of others" (p. 62). Gronn (2002) suggested interdependency as reciprocal dependence that occurs when roles have "mutual needs for information and support" (p. 432). Spillane (2005) pointed out that in his distributed leadership study, interdependency was the main basis for the leaders' interactions. Spillane noted that in this manner, leaders working together created an interdependency that was reciprocal in their actions.

There are many empirical studies of shared leadership that refer to or implicate task interdependence. Unconventional teams described in both recent and older studies reflect this referral or implication. These teams represent industries as diverse as the arts (Bechky, 2006; Kramer, 2006; Murnighan & Conlon, 1991), health care (Bigley & Roberts, 2001; Klein et al., 2006), restaurants (Whyte, 1948), and insurance agencies (Bowers & Seashore, 1966). Although the industries were diverse, the teams themselves shared a common formation and process of leadership. One explanation for this commonality is that bureaucracies are making use of new organizational forms including

temporary organizations to manage critical and time-sensitive scenarios as diverse as fighting fires (Bigley & Roberts, 2001) and supporting film productions (Bechky, 2006).

For instance, Murnighan and Conlon (1991) emphasized the interdependency of individual quartet members in their broad research of shared leadership. A study by Kramer (2006) focused on a community theater and how secondary-level leaders and cast members interacted to share leadership when the formal leader failed to assume responsibility. Bechky's (2006) study of temporary film-making teams determined that high interdependence of tasks was closely related to their successful execution. Bechky described the "delicate balancing act" of technical experts performing their own role to finish the job and the "role expectations to guide relationships and tasks" in order to maintain working relationships (p. 14). This research pointed to the strong social pressure that ensured that everyone performed in their role and that the role structure and enactment helped to coordinate their work.

In addition to Bechky's research, another study by Bigley and Roberts (2001) of firefighters concluded that organizations achieved better performance and quicker action as a result of blending hierarchical structures with flexible processes. The incident command system that Bigley and Roberts described is also based on interdependence of key roles. In fact, there were four sections that reported to the incident commander, which were filled by different people rotating within these roles depending on work schedules and expertise. Table 2.4 presents in chronological order scholarly references related to the study of task interdependence.

Table 2.4
Key Literature on Task Interdependence

Researcher(s)	Key Findings
J. D. Thompson (1967)	"Mutual adjustment" is a means for team members to coordinate with one another. It is the action each specialist in a team has to make to "adjust his actions to the actions of others" (p. 62).
Murnighan & Conlon (1991)	Quartet members are highly interdependent. The first violinist makes the final decision when the quartet members disagree. This act was attributed to leadership but may be better described as expert decision-making, as the first violinist is generally the most virtuosic member of the quartet.
Ilgen (1999)	More jobs are interdependent with other jobs than ever before.
Bigley & Roberts (2001)	A study of firefighters demonstrated quicker action when blending hierarchical structures with flexible processes.
Spillane (2005)	The distributed leadership study identified interdependency as the primary characteristic of interactions among leaders (p. 146).
Kramer (2006)	This community theater ethnography study described how secondary-level leaders and the cast interacted to share decision making when the formal leader failed to perform.
Bechky (2006)	This study of temporary film-making teams determined that a high interdependence of tasks interrelated closely with successful execution.

This literature is important because it describes the interdependency of team members based on common tasks that linked them together in a supportive manner. The action each specialist in the team had to make was an adjustment to his or her team members' actions. The implication is that task interdependence binds the members of a team together as they work to reach their common goal.

Expertise and Team Decisions

If expertise leads to greater speed in performance, then it is reasonable to apply this notion to the decision-making process. Vroom and Yetton (1973) researched decision making in the context of leadership and leaders' relationship with leaders. They also described the role of situational variables that interact with leader behavior and the effectiveness of decisions made in the organization. In particular, they researched leaders' choices regarding how and how much to involve subordinates in decision

making. Individual leadership was found to result in interpersonal decision making. Vroom and Yetton also addressed expertise and noted that decision-making teams should contain participants who have the expertise necessary for planning.

Team decision making can also be compared to *naturalistic decision making*, which is "the way people use their experience to make decisions in field settings" (Zsambok, 1977, p. 4). Further, it is "how experienced people, working as individuals or groups in dynamic, uncertain, and often fast-paced environments, identify and assess their situation, make decisions and take actions whose consequences are meaningful to them and to the larger organization in which they operate" (Zsambok, 1977, p. 5).

Team decision making has been discussed in a variety of environments. Patel, Kaufman, and Magder (1996) studied a hospital intensive care unit setting, showing that group decision-making was necessary to ensure that expertise was considered in the final decision. Because of the inherent shift changes that occurred in hospitals, employees were rotated, which complicated the coordination of decision-making that may have been complex and even urgent (Patel et al., 1996). They further described an "iterative decision-action cycle" where the treatment program was adjusted continuously whenever new information emerged (Patel et al., 1996).

Another environment was that of high-reliability organizations (HROs), which are organizations that have prevented catastrophes in high-risk environments. Weick and Sutcliffe (2001) discussed the importance of expertise for decision making regarding unexpected operating issues in an HRO, wherein the "designation of who is the 'important' decision maker keeps changing based on the decision maker's specialty" (Weick & Sutcliffe, 2001, p. 74). According to Weick and Sutcliffe, in HROs, "expertise

and experience is more important than rank," and expertise at any level of the organization is tapped to match the appropriate skill set with the problem at hand (p. 74).

The expert was compared with novices in an earlier section of this chapter, and that distinction applies to decision making as well. Patel, Groen, and Arocha (1990) pointed out that the difference between expert thinking and novice problem solving is in the directionality of the inferences. For instance, forward reasoning states the hypothesis as a result of the data. Backward reasoning states the data as a result of the hypothesis. These findings resulted from the field of artificial intelligence (Patel et al., 1990). From here, it was concluded that forward directionality relates to expertise.

Serfaty, MacMillan, Entin, and Entin (1997) found that participants with higher expertise created more courses of action that were detailed and contained more contingencies than novices. Also, they found that experts were able to concentrate on what was unknown to them and respond by asking questions that were characteristically "diagnostic" (p. 8). G. Klein (1997) agreed that diagnosis is an essential part of problem solving, as his study revealed that decision makers assess situations they are uncertain about and even compare alternatives that might explain the phenomena. According to Dreyfus (1997), "Novices initially make decisions and take action by learning a set of rules" (p. 9). As a result, they gain greater competency when using rules in conjunction with more "comprehensive and abstract rules [that lead to] more fluid decision making and acting" (p. 9). Dreyfus described an expert as one who not only "sees what needs to be done but decides how to do it" (p. 22). Further, the expert can make the distinction between scenarios that appear similar yet require different action.

Joseph and Patel (1986, 1990) described *subexperts* as experts outside their domain of experience. Subexperts were observed to have created more hypotheses than experts with resulting explanations being less coherent than those of an expert (Joseph & Patel, 1986, 1990). Orasanu and Connolly (1993) pointed out that monitoring and feedback rather than using judgment alone affects decisions. For example, medical professionals started with the review of "theory followed by clinical evidence and then the study of exemplars and analogy" (Orasanu & Connolly, 1993, p. 99). In this description, it is clear there is less dependence on the functional understanding of the system. As compared to novices, "the cognitive underpinnings of how experts decide and act are qualitatively different" (Orasanu & Connolly, 1993, p. 9). G. Klein (1997) also noted there is evidence that cognitive resources and complexity are a function of expertise.

The work of another researcher, March, furthers a theory of exploration and exploitation that relates to knowledge. The exploration portion of his theory refers to nomenclature such as "search, variation, risk taking, experimentation, play, flexibility, discovery, innovation" (March, 1991, p. 71). In contrast, exploitation concerns "refinement, choice, production, efficiency, selection, implementation, execution" (March, 1991, p. 71). He said that often, organizations choose to maximize one approach over the other. For instance, organizations may decide to focus on maximizing efficiencies of present processes and systems rather than investing in future research and new development, which takes more time and has benefits that may be more difficult to quantify. However, March (1991) warned that too little of one approach negatively impacts organizations. In fact, organizations thrive when they strike a balance between

each approach. In that his theory involves exploration and exploitation, two concepts that relate strongly to new product development, March's work has a pertinent application to the current study.

Another researcher, Kahneman (2011), described what he called *System 1* and *System* 2 thinking and how they relate to the concepts of thought and knowledge. System 1 thinking signifies quick, intuitive thinking compared to System 2, which represents conscious, conceptual thinking and reasoning. These two systems have relevance for this comparative study, as they offer implications for new product development teams. Table 2.5 presents key literature sources for expertise and team decisions in chronological order.

Table 2.5
Key Literature on Expertise and Team Decisions

Researcher(s)	Key findings
Vroom & Yetton (1973)	Situational variables interact with leader behavior and the effectiveness of decisions made in the organization. Vertical leaders should involve others when there is a high need for quality decision making, such as when subordinates have additional knowledge, when it is important for subordinates to accept a decision, and when the potential for conflict related to the decision is low.
Zsambok (1977)	Naturalistic decision-making is "the way people use their experience to make decisions in field settings" (p. 4). Further, it is described as "how experienced people, working as individuals or groups in dynamic, uncertain, and often fast-paced environments, identify and assess their situation, make decisions and take actions whose consequences are meaningful to them and to the larger organization in which they operate" (p. 5).
Joseph & Patel (1986, 1990)	Subexperts are experts outside their domain of experience. Subexperts have been observed to create more hypotheses than experts, resulting in less "maximally coherent explanations" (p. 99).
Orasanu & Connolly (1993)	Decisions are affected by monitoring and feedback rather than using judgment alone. For example, medical professionals start with the review of "theory followed by clinical evidence and then the study of exemplars and analogy" (p. 99).
Patel, Kaufman, & Magder (1996)	There is an "iterative decision-action cycle" where the treatment program is adjusted continuously whenever new information emerges. In an intensive care unit, group decision making is necessary to ensure expertise is considered in the final decision. Because of the inherent shift changes that occur in hospitals, employees are rotated, which

Researcher(s)	Key findings
	complicates the coordination of decision-making that may be complex and even urgent.
Serfaty, MacMillan, Entin & Entin (1997)	Compared with novices, participants with higher expertise created more courses of action that were detailed and contained more contingencies. Also, experts were able to concentrate on what was unknown to them and responded by asking questions that were characteristically "diagnostic" (p. 8).
G. Klein (1997)	Diagnosis is an essential part of problem solving. The study revealed that decision makers assessed situations they were uncertain about and even compared alternatives that might explain the phenomena.
Dreyfus (1997)	"Novices initially make decisions and take action by learning a set of rules" (p. 9). As a result, they gain greater competency when using rules in conjunction with more "comprehensive and abstract rules" that lead to "more fluid decision making and acting" (p. 9). As compared to novices, "the cognitive underpinnings of how experts decide and act are qualitatively different" (p. 9).
Weick & Sutcliffe (2001)	The assignment of the 'important' decision maker changes depending on expertise and experience.
Brodbeck, Kerschreiter, Mojzisch, & Schulz-Hardt (2007)	There is an expectation that decisions made by groups with diverse expertise are superior to decisions made by individuals. High-quality decisions are reached by learning from team members' expertise through interaction.

In summary, this literature is relevant because it covers how expertise can influence the outcome of collaboration. It provides a clear argument that experts can solve problems more quickly than novices and relays how people with higher expertise can create more courses of action than novices. In addition, experts are able to focus on what is unknown and ask questions that are diagnostic in nature. Decision making by team members with a variety of expertise is a superior process than decision making by individuals alone. Further, experienced people working in urgent and fast-paced settings follow processes that help them unleash their expertise in order to make decisions that have a significant impact in the organization. New product development is generally based on a team structure, so the process of developing products maximizes specialized skills that go beyond the capability of each individual team member (Cox et al., 2003; Parker, 1994; Sashkin & Sashkin, 1994).

CHAPTER 3:

METHODS AND ANALYSIS

In this chapter the methodology utilized to conduct this comparative case study is discussed. This chapter is organized with sections on research design, the research site and participants, procedures for data collection, procedures for data analysis, the strength of the methodology, and limitations. The study was designed to answer the two research questions: How does distributed expertise and shared leadership occur in new product development teams? and How does distributed expertise relate to shared leadership in interactions within new product development teams?

Research Design

This research utilized a qualitative study of two new product development teams within a prominent life insurance company. The purpose of this comparative case study was to describe expertise and shared leadership in the context of two teams where team members were highly task interdependent and were noted for their specialized knowledge within a specific domain. This research was conducted to better understand how shared leadership and expertise occurred and how they related to each other in the form of team interaction.

It was desirable to choose two different teams, as multiple cases provide a greater opportunity for understanding processes (Miles & Huberman, 1994). Multiple case studies also maximize the potential variation of the findings and increase the likelihood of differing perspectives (Creswell, 2007). This way, any variation of pattern helps the

researcher determine if the main patterns hold up in the face of outliers (Miles & Huberman, 1994).

This researcher selected a qualitative approach for this study, as there were already a number of published quantitative studies that measured the effectiveness of shared leadership and the degree to which individual expert performance outperformed novice performance. At the time of this study, there were no qualitative studies published of longstanding teams that worked together toward long-term goals. Studies of shared leadership teams were focused on temporary teams composed of individuals who performed in roles for a short period of time before the group was disbanded (Bechky, 2006; Bigley & Roberts, 2001; Klein et al., 2006; Kramer, 2006). In contrast, studies on expert performance were conducted in laboratories rather than in real-life scenarios. The purpose of this study was to better understand how the two constructs illuminated team interaction among task-interdependent individuals in an office setting.

In addition, there were three other reasons for the selection of a qualitative approach for this study. First, due to the nature of the research questions, the study required a qualitative approach in order to explore the "what and how" of the process of team interaction of expert team members who were task interdependent (Yin, 2003). In the process of team interaction, dialogue was noted as it related to distributed expertise and shared leadership (Creswell, 2003; Lincoln & Guba, 1985). This study focused on team interactions to determine how communications and the exchange of information may have been impacted by peer influence and expertise in a group setting. Gephart (2004) specified that qualitative research "recounts who said what to whom as well as how, when, and why" (p. 455). As new product teams collectively shared leadership to

make decisions about new product development, the observations helped identify the dynamics of communication that led to the distribution of expertise as it unfolded.

Second, according to Edmondson and McManus (2007), qualitative research is called for in cases of nascent theory, where "rich, detailed, and evocative data are needed to shed light on the phenomenon" (p. 1162). Empirical studies involving shared leadership and expertise tend to be quantitative. Since studying expertise in a team context within a business setting is a relatively new concept, it was appropriate to apply qualitative methodology to this study. As the vast majority of studies concerning shared leadership and expertise have been quantitative in nature, the qualitative method is considered to "supplement, validate, explain, illuminate or reinterpret quantitative data" (Miles & Huberman, 1994, p. 9).

The third reason for a qualitative study is related to this researcher's personal worldview that an important factor in understanding reality is to consider the interpretation of the observer. As a social constructivist, the researcher believes that what is knowable must be considered along with the observer's view.

Research Site and Participants

Since the research method was a comparative case study, a company site was identified. As an employee of the organization selected, this researcher sought to reduce researcher bias by studying groups outside her span of control who were composed of individuals less familiar to her. The teams were focused on new product development work that involved product knowledge and experience. There were several teams associated with new product development. One was a strategic team that planned far into the future. Their discussion explored trends and possibilities that aligned with future

economic necessity and market demands. A second team designed products to be implemented within a year. Their focus was on the competition and the profitability of the company's current portfolio. Their meetings dealt with product discussions that included benchmarking data. A third team handled all the tactical steps that occurred in a project plan to ensure the successful development and deployment of the product conceived by the second team. Experts from the broader organization participated in bringing the new product to market. Due to the fact that the strategic team did not meet frequently, it was not selected for the study. However, this team was used as the pilot to conduct a "dry run" of the observation process. As a result, the research was based on the two teams that had a consistent meeting schedule.

This researcher made a point to identify the aim of the study and the data collection methods to the participants to minimize their effect on the setting and the participants (Miles & Huberman, 1994). The team size ranged from 8 to 10 participants. The participants were professional adults who were actuarial, product, marketing, and technology experts. One group was responsible for conceptualizing life insurance products, and the other focused on its development and launch. The members of the teams ranged in age from their early 30s to early 60s. Their expertise was derived from their formal education as well as their years of experience in developing products in the insurance industry. These teams were chosen for several reasons: (1) their purpose was to develop new life insurance products; (2) they served as exemplars for teamwork in this life insurance company due to their successful track record of accomplishments; and (3) these teams were accessible for observation, as they were part of the organization in which the researcher was employed. Due to competitive reasons, selecting another

organization in the insurance industry was not realistic for a researcher already affiliated with an insurer, as new product development work is considered proprietary and highly confidential.

Data Collection

Before data were collected from the targeted teams, the pilot with the product strategy team was held to provide the researcher with experience in observing and recording a product development meeting. In conformance with the requirements of the institutional review board, permission was granted by the chief financial officer and two vice presidents responsible for new product development before beginning data collection. In addition, the teams were given the option to decline participation if their comfort level did not allow it. Assurances were given that confidences would be held and no names would be associated with the data.

Meeting Observations and Transcripts

This study focused on group interaction to determine how team members responded to each other and how they were influenced by expertise or other factors. The research was conducted to answer the research questions in a manner that described the experience (Miles & Huberman, 1994). Meetings that focused on developing new products were observed and audio recorded. In this way, this researcher captured the full group discussion in order to discover what information influenced the making of decisions. The compilation of data included conversations between members of the new product development teams in order to trace what patterns of conversation proved influential based on expertise and leadership. Any observations of body language,

including facial expressions, were noted while the auditory recording captured the conversation.

Five weekly meetings with the Tactical Team were observed and recorded first, as their meeting times coincided best with this researcher's schedule. When those transcriptions were complete, the researcher attended five meetings of the Concept and Feasibility Team. All the recordings were personally transcribed by the researcher, which amounted to approximately 300 pages. They were transcribed quickly within a few days of the meetings and were reviewed several times afterward to capture any detail that was initially missed. After the transcription process, observations of the teams' actions were summarized to ensure the essence of the team interaction was richly captured. A thick description of the meetings—including actual words as they were spoken—was captured in the transcripts.

Interviews

Interviews were scheduled after team meetings were transcribed and coded. A pilot interview was also conducted to determine if any refinement to the data collection process was necessary. The pilot was selected on the basis of convenience and objectivity, since the interviewee worked at the research site yet had no familiarity with the product development process. The pilot interview tested the ease of comprehension of the questions. During the pilot, the questions appeared to flow well and were readily understood by the participant.

The interviews were based on purposeful sampling, as the participants were selected based on their status as regular members of the teams. There were seven face-to-face interviews in all: three from the Concept and Feasibility Team and four from the

Tactical Team. These interviews were voluntary, and no names were collected so the source of the information was anonymous. The interviews were conducted in a private office away from distractions. The interviewee was reminded of the purpose of the study and was given assurance that the information from the interview would be held in confidence. The interviews were recorded with a digital audio recorder.

The purpose of the interviews was to triangulate the findings and potentially uncover inconsistencies. The interviews were semistructured and contained open-ended questions to gain insight on the participants' teamwork. The questions were organized by the constructs of the conceptual frame and were reviewed by a faculty member. There were five main interview questions with related subquestions, as shown in Appendix C.

To increase the rigor of the study and trustworthiness of the data, the transcribed interviews were member checked, as recommended by Lincoln and Guba (1985). Each participant reviewed a transcript of his or her interview and was asked if the transcription accurately represented his or her responses. After all the interviews were approved by the participants, they were coded.

Summary

Table 3.1 summarizes the data collected from each team. Overall, the data included observations of body language, auditory recordings of interactions, interviews, and a review of meeting minutes and tables of data that related to the company's new product development process.

Table 3.1
Summary of Data Collection for Both Teams

Team	Meetings	Meeting hours	Interviews	Interview hours	Roles of team members interviewed
Tactical	5	90 minutes each 7.5 hours total	4	4	Business analysis Marketing Systems assurance Technology
Concept and Feasibility	5	90 minutes each 7.5 hours total	3	3	Actuarial Marketing Market research

Data Analysis

The transcribed meetings were hand coded. Carley (1993) suggested developing some of the coding criteria before reviewing the transcripts and then reevaluating the coding again to ensure the themes were properly identified. In keeping with this suggestion, codes were developed prior to the observations, though many more were developed to capture patterns as they emerged. The codes that were identified in advance were based on theoretical constructs in order to detect references to expertise and shared leadership. Ultimately, some of the theoretical codes were replaced with more relevant codes that were developed at the time of the coding process. All the codes are listed in Appendix B.

Line codes were noted in the margins of each page, and then data with similar codes were organized together in clusters to determine themes. Categorizing clusters was accomplished by asking "is this code similar to that code" (Jarzabkowski, 2008, p. 626). Text segments of the meetings were then identified and placed in tables with their corresponding codes. The text segments that contained similar coding were categorized so that they would serve as examples when presenting findings.

The interviews were coded based on the patterns that emerged, as recommended by Eisenhardt (1989). As characteristic of qualitative studies, this researcher continuously moved from the data to the emergence of theory (Eisenhardt, 1989). The thick descriptions were matched with the theoretical perspectives and from there the theory and research questions helped eliminate the unimportant data. While the interviews helped triangulate findings, this step was further supplemented by a review of organizational artifacts. The underlying objective of this qualitative study was to ensure that all aspects would be credible, transferable, dependable, and confirmable.

Table 3.2 displays the constructs studied in order to project how team interactions might be presented as they related to the constructs. This chart contributed to the review of observations based on the two new product teams in order to discern when shared leadership and distributed expertise were presented.

Table 3.2
Stages of Analysis

Constructs to be studied	**Tasks**
Analyze the role of expertise in the team	Review the coded key words and phrases that are associated with expertise
Describe the nature of task interdependence among the team members	Describe the dependencies each team member has on other members of the team and deference in complex situations
Describe the relationship of discussion and decision-making to expertise	Determine what decisions were made and note what information, language, and actions led to decisions
Describe team interaction and how it may relate to shared leadership	Determine if team interaction was characterized by full participation, or whether direction was set by a few.
Note the instances team dynamics result without the assistance of expertise and if influenced by shared leadership or authoritative roles	Determine if team interaction was due to the influences of shared leadership or authoritative roles rather than expertise.

Strength of Methodology

Naturalistic sampling was based on informational rather than statistical purposes (Creswell, 2007). While the results of the research are not in a generalizable form, the conclusions are transferable. The intent of the study was to provide rich, quality data so it would resonate with the reader who is interested in learning more about the roles of expertise and shared leadership in team interaction.

It was important to consider how to ensure trustworthiness of the findings. This meant considering the four facets of trustworthiness: the credibility (internal validity), transferability (external validity), dependability (reliability), and "confirmability" (objectivity) of this research (Lincoln & Guba, 1985).

Credibility

To achieve credibility, the participants were selected based on the teams they participated as members. The team members were interdependent, commanded expertise, and had autonomy for making decisions about the products they were developing. As a result, the teams selected for observation were peer-driven teams made up of experts who were charged with responsibilities that created an interdependence of tasks for each member.

To meet the criteria of credibility, there was a need to infer a relationship between the distribution of expertise and leadership sharing. The team was made up of experts who utilized their expertise to inform their discourse and decisions**.** According to Lincoln and Guba (1985), the data collected and transcribed from the interviews should be member checked by the participants. They also recommended peer debriefing to further

strengthen credibility. In this research, peer debriefing was accomplished by involving a second researcher to question the initial findings so biases could be detected.

Transferability

To ensure transferability, the researcher must be able to infer that the relationships studied can be generalized across "different types of persons, setting, and times (Lincoln & Guba, 1985, p. 291)." This was accomplished by ensuring all aspects of the study were planned carefully.

Dependability

The dependability of the research establishes the right conditions that will lead to the validity of the study. Dependability includes "factors of instability and factors of phenomenal or designed induced change" (Lincoln & Guba, 1985, p. 299). Dependability relies on a study design that is "consistent, reasonably stable over time and [reaches] across researchers and methods" (Miles & Huberman, 1994, p. 278). The goal is to create circumstances in the study that could be repeated if the inquiry was surfaced with similar participants and context. One way of ensuring that dependability is achieved is by considering the analogy of "quality control," where a review of the quality of all factors is made when designing the study (Miles & Huberman, 1994, p. 245).

Confirmability

Confirmability addresses the grounding of the study findings with the data, the logic of the inferences from the data, and researcher bias (Lincoln & Guba, 1985). Review of the data and inferences was conducted with a colleague not associated with the

site study as well as the chair of the researcher's dissertation committee to ensure appropriate confirmability.

Limitations

The multiple case design expanded the external generalizability of the findings as it maximized the potential for variation as it related to the context of each team (Yin, 2003). However, the findings cannot be fully generalized, as the study was limited to specific types of teams (new product development teams) in a specific type of organization (life insurance company). Therefore, the results of this study cannot be generalized to other types of teams or other organizational contexts.

Summary

This qualitative comparative case study explored the interactions of peer team members who represented different technical areas of the company and who were regarded as experts in their field. The participants observed were members of two separate but related teams that supported the new product development process for this life insurance company. In addition to observations, interviews were conducted with the key members who attended team meetings on a regular basis. Minutes and other documentation the teams used as part of their agenda were reviewed. All three methods served to triangulate the findings of the study. A variety of methods were utilized to ensure reliability and trustworthiness of the data. Detailed analysis of the data provided patterns that led to the findings and conclusions presented in the next two chapters.

CHAPTER 4:

FINDINGS

The purpose of this multicase study was twofold. The first was to analyze microteam interactions that were linked to the generation of new product ideas, and the second was to compare and contrast how the interactions were related to current theories explaining the relationship of expertise to shared leadership. To accomplish these goals, the study was developed around two research questions:

1. How does distributed expertise and shared leadership occur in new product development teams?
2. How does distributed expertise relate to shared leadership in interactions within new product development teams?

This study used two different new product development teams in order to maximize variation of both leadership and expert interactions. The first team was the Concept and Feasibility Team, and the second was the Tactical Team. These teams were responsible for design and construction of new life insurance products for a mid-size mutual life insurance carrier. The teams had slightly different purposes, but both were composed of product experts who supported the development of new life insurance products. Each team provided specific context for collective interaction and the unfolding of expertise and shared leadership.

This chapter contains the findings that relate to the internal interaction of these two new product development teams. Three methods of data gathering were used: meeting observations, individual interviews, and document review. The interviews revealed what the team members thought of their collective interaction, while the

meetings provided opportunities for direct observation of their interactions. Data were reviewed and coded, and patterns were identified. These patterns resulted in the key themes that related to the research questions.

This chapter begins by reviewing the formation and operation of each team and the demographics of the team members. Data are then presented for the Concept and Feasibility Team, responding to each research question, and then for Tactical Team, responding to each question.

Team Formation, Operation, and Demographics

Concept and Feasibility Team

The function of the Concept and Feasibility Team was to "pitch" new product-related ideas and to determine their likelihood for a successful launch. This team conducted regular meetings in order to brainstorm new product ideas to advance sales and maintain the company's strong financial status. It was routine for this team to review its portfolio of products and make comparisons to the competition's new products and sales results.

For this study, this team's interactions were recorded in 2009. This was a significant period for the industry, as various economic dimensions were in the midst of major changes. Economic volatility stemming from investments in derivatives influenced stock market performance and interest rates. The S&P 500 Index dropped by almost 40%, and the Life and Health Insurance Index from June 2008 to June 2009 dropped by 52%. The unemployment rate was rising, and the uncertainty of consumers' purchasing power began impacting the industry's profitability. Rankings and ratings of companies fell dramatically as the atmosphere that once led to high growth and investment was taking a

major downturn. Due to the upheaval that led to major losses for larger insurance carriers, this company felt a great sense of urgency in evaluating its risk exposure. As other companies watched their ratings drop, this mutual life insurance company made the reevaluation of its product strategy, portfolio, and pricing practices a high priority in order to ensure continued financial stability.

The team was cross-functional, with players representing expertise from all relevant parts of the company. Representation on the team was derived from areas as diverse as product, actuarial, marketing, underwriting, advanced sales, and technology. As a result, the team members collectively provided a broad and expert perspective to the product development process. The team was composed of individuals with the required skills and had representatives from the key functional areas needed to influence the success of the project. As a testament to their expertise, two of the team members had law degrees, and the actuarial members held certifications such as the Associate of Society of Actuaries (ASA), Fellow of Society of Actuaries (FSA), and Member of the American Academy of Actuaries (MAAA) designation. There are seven exams to attain the ASA and an additional two to achieve the FSA. The MAAA qualifies actuaries to sign actuarial certifications when filing products with regulatory bodies such as state insurance departments. Altogether, becoming an actuary typically takes 6 to 10 years of study and a commitment to maintaining continuing educational requirements. Besides the core team members, other individuals occasionally attended the meetings to learn what product ideas were being discussed. However, these individuals were not regular members of the core team and rarely participated in the team's discussion.

Table 4.1 presents demographic details for the Concept and Feasibility Team. Team members' total experience in the industry was a little over 300 years; team members had an average of 27 years in the industry.

Table 4.1
Demographic Characteristics of the Concept and Feasibility Team

Role	**Gender**	**Age**	**Years of industry domain experience**
Product business analyst	F	40-45	27
Actuarial	M	35-40	11
Actuarial	M	45-50	40
Actuarial	M	45-50	28
Sales	M	35-40	15
Sales	M	60-65	40
Underwriting	M	60-65	46
Technology	M	50-55	20
Market research	F	55-60	30
Marketing	F	40-45	18
Marketing	M	60-65	30

The meetings for this team were 90 minutes in duration and were held in the same conference room on the same day and time on a biweekly basis. Each team member made a commitment to attend all meetings, and while there was an occasional absence, it was an infrequent occurrence. The agenda and supporting documents were brought to the meeting and distributed. The agenda items were followed in the order presented, but exceptions were made if a speaker could not stay for the entire meeting or if one of the topics became a greater priority.

The team members' charge was to weigh in on a new product-related topic with knowledge and experience from their particular domain of expertise. Discussion by this group was generally lively due to the nature of sharing industry data and generating product ideas and product possibilities. In this setting, questions were raised and facts were interspersed with opinions. It was noteworthy that this team was not insulated from

matters of feasibility and risk, as many of the team members were responsible for execution of the product within established timeframes and budgets.

If product development was projected to run longer than expected, it ran the risk of impacting the marketability of the product. Producers needed time to learn how a new product operated to run illustrations and integrate marketing concepts as part of the sales process. Generally, new product implementation had a "black-out" period during the last 2 months of the calendar year. This "black-out" period was due to the big push generated by the sales force to complete production by the end of the year in order to qualify for that year's sales awards. Therefore, a late introduction of a new product with its corresponding training curve was considered a distraction to producers who were driving towards year-end sales goals. As a result, the new product development project had to be time sensitive to be successful.

The team often used the competition's products as a springboard for creating its own ideas. Sometimes competitors' products inspired the building of a hybrid that contained blended features from more than one product. The reporting of the research led to an engagement by the team where the interaction was detailed with facts and questioning. As more information was shared as a result of the questioning, more dynamics resulted that led to idea generation.

Typically, the team started its meeting discussion by reviewing what competitors were doing and how their product features and pricing compared. This information was gleaned from industry groups the team members attended as well as from the public domain. Data about the competition's experience with a product, such as its profitability, were typically discussed.

Product discussions held within this team reached levels of complexity that required the expertise, influence, and coordinated activities of the team members. When considering a product similar to one of another company, the team probed its features and benefits and how they could be operationalized. In order to achieve this level of analysis, a great deal of information was needed. As a result, multiple sources of information were collected by the team. Those sources ranged from market data accessed through research associations to experienced sales professionals who had direct experience with the industry's offerings. Specifically, sales rankings of competitors were gathered by the Life Insurance Marketing Research Association, a prominent industry organization. Illustrations of competitors' products were accessed by team members in order to home in on rates by specific risk factors (i.e., gender, age). An additional source for ideas came from field management responsible for sales quotas for their offices. Field management's recommendations, along with those from their producers, were given high consideration, as their ideas often came out of their selling experience with this company's competitors. Gathering all this information from the various sources and having a working knowledge of the relevant details required coordination and distribution of knowledge by members of the team.

Spreadsheets contained all the pertinent data and subsequent ideas from the meetings. The ideas were identified by product line and specified what features needed to be added to existing base products. If ideas were too similar to what a different line of business provided (such as long-term care or disability coverage), they were eventually disregarded, as that would put a proposed product in a different category where greater regulatory scrutiny would impact the approval process.

The team first generated ideas without allowing the element of cost and effort to interfere with their creative process. However, the team was responsible for deciding if the cost or effort to support the proposed product would be too great. This responsibility led to the team's assessment as to whether or not the product design would produce a financial strain on the company's surplus. The actuaries on the team analyzed and made decisions, as they had the expertise to estimate the impact on capital. The technology experts as well as others on the team determined if there was going to be a strain on programming time or on administrative support.

An example of this evaluation dealt with the programming time necessary to recode changes as well as concerns that administrative staff members have sufficient information on their desktop computers to offer assistance to customers once the product "went live." To accelerate the introduction of the new product into the marketplace, the first phase of product development focused on illustration and issuance capabilities. This way, producers could illustrate the product's financial projections and the company's "new business" department would be capable of issuing the policy.

Duration of the new product development process was based on the complexity of the work and the resources available. Decisions also were made about whether the project was too expensive given the timeline. Often a good assessment was not possible until programmers actually went to work. An analogy given was "you don't know what is under the hood of a car until you lift it up and peer into all of its parts" (technology team member).

When ideas could not be decided on immediately, the team members continued their discussion at the following meeting. Before any decision could be made, the

actuarial staff had to determine if proposed products would pass the marketability and profitability tests. The actuarial members of the Concept and Feasibility Team calculated how they could price the new product so it was competitive yet profitable.

Tactical Team

The second team studied was the Tactical Team. It had a connection to the Concept and Feasibility Team, as it supported ideas that were conceived by that team. More specifically, the purpose of the Tactical Team was to plan and implement a successful launch of a new product as part of the company's product offerings. There was an overlap of members from the technology, marketing, and product departments between the Concept and Feasibility Team and the Tactical Team, so there was a vested interest in the successful application and execution of new product ideas.

Once an idea germinated and was considered feasible by meeting marketability and profitability criteria and being supportable by technology and the administrative areas, it was turned over to the Tactical Team as a formal project. The Tactical Team focused strictly on the implementation stages of new product development and the timelines for each stage. The Tactical Team monitored progress by verbally reporting updates. As milestones were reached, they were updated in a spreadsheet and shared at the weekly meetings.

The administrative assistant of the product development department requested agenda items from the team each week and published the agenda based on their topics. The team relied heavily on this prepublished agenda and "report outs" were provided in the order presented. During the meeting, the product actuary moved the team through the major items on the agenda. The project manager, who was assigned to overseeing the

product initiatives, covered the specific status of each product and updated the task list based on the discussion. Other team members who were more closely associated with a particular phase of the project provided more detail about its progress. At the end of the agenda, new "walk-on" items were shared. Even though the team members were given a few days to offer ideas for the agenda, new unplanned items were always given an opportunity for discussion.

The members of the core team regularly attended the weekly meetings. The member who had the most knowledge about the status of the project reported its disposition to the rest of the team. The project manager had overall knowledge about the timeline and what was necessary for completion to deliver the product to the marketplace and for its administration. Nevertheless, it was often the team member responsible for a functional area (such as technology or marketing) who was knowledgeable about the status of a specific task.

When status was reported about the new product deliverables, there were generally questions if the status did not meet expectations. If there was slippage, often the team attributed the problem to resource contention. Either there was resource impact due to the length of time another project was taking or there was a shortage of the required technical aptitude to support the project. Another reason for unanticipated problems was the additional programming time required to correct defects and fully test changes. The team reacted to delays by asking questions about the cause and different ways to remedy the situation reported. In addition to the project manager, the technology and quality assurance leaders often stepped in to describe an issue in more detail and to offer solutions when needed.

The logistics of the Tactical Team meetings were predictable, as they were scheduled on the same day each week, at the same time of day, and in the same conference room. People often took the same seats in the large conference room. The duration of the meeting was 90 minutes. The agenda was distributed at the beginning of the meeting, and occasionally there were other handouts that contained information for the team members. Meetings were started on time and attendance was noted. Minutes were typed and sent to everyone within a few days. The cycle started again with email asking for topics so a new agenda could be published and sent prior to the next meeting. Even so, hard copies were routinely printed by the department's administrative assistant and distributed to everyone at the meeting so team members would have the agenda at hand. The business analyst and the project manager moved the members through the agenda.

The collective experience of the Tactical Team members totaled 145 years with an average of 21 years per member. Their experience level was 22% below in years compared to the experience level of the Concept and Feasibility Team. A breakdown of the Tactical Team members' expertise, age, gender, and years of experience is shown in Table 4.2.

Table 4.2
Demographic Characteristics of the Tactical Team

Role	**Gender**	**Age**	**Years of industry domain experience**
Product analyst	F	40-45	25
Product actuary	F	45-50	23
Junior product actuary	M	35-40	11
Technology	M	50-55	20
Systems testing	M	40-45	26
Marketing	F	40-45	18
Project manager	M	40-45	25

Research Question 1: Concept and Feasibility Team

Research Question 1 asks how distributed expertise and shared leadership occur in new product development teams. The two sections below present findings first on expertise and then on shared leadership for the Concept and Feasibility Team. These findings were identified from the collection of data resulting from meeting observations and interviews. Patterns became apparent from the recorded team interactions and from the way participants responded to interview questions. For the discussion of the interactions, a brief introduction of the context of the dialogue is provided, the dialogue appears in table format, and then the interaction is summarized. Company names in the discussion have been replaced with letter references.

Expertise

Meeting observations. Expertise occurred in interactions whenever a team member shared an idea based on his or her particular domain of specialized knowledge. Each domain reflected a functional area in the business such as marketing, sales, actuarial science, and technology. Overall, two themes attributable to expertise were observed. They were expertise as *competitive intelligence* and expertise as *product design*.

Expertise as competitive intelligence. In the context of the Concept and Feasibility Team, expertise became apparent whenever team interaction turned to the topic of competitive intelligence. Competitive intelligence was a specialized form of information derived from market research that focused on other companies' products, pricing, and sales. As part of the process to develop new product ideas, there was a concentration on reporting on other companies' product offerings. Some of this information was derived from research, and its documentation was distributed at the time

of the meeting. Competitive information was also present in the minds of team members based on their participation at industry forums. Table 4.3 shows an excerpt of conversation having to do with competitive intelligence observed in one of the meetings of the Concept and Feasibility Team. In this segment the team questioned how other companies presented their rates in sales illustrations.

Table 4.3
Concept and Feasibility Team: Competitive Intelligence Segment 10/6/2009

Team member	**Quote**
Marketing	"We need to start asking our peers how they set their rates in their illustration system and the frequency that they do that."
Actuarial	"We do it every quarter."
Market research	"N Company must do it monthly, because their rates have changed monthly; they've gone up and down, raised their cap and lowered their cap. . . ."
Actuary	"So the rate would have to change."
Marketing	"I don't think other companies comply with California's requirement, or if they do, they do in a way that is totally different than in a way we interpret what California requires it to be. It occurs to me that in October we were the only ones that changed our rate."
Market research	"We were."
Marketing	"Does that mean no one else looks at this thing on a rolling basis? When people ask questions would be nice to know how everyone else is doing this."

The interaction began with the need to know what other companies were doing ("we need to start asking our peers") and concluded in the same way ("nice to know how everyone else is doing this"). Having awareness of current trends and practices was desirable, as the team believed it gave them a competitive advantage. There was some discussion that interest rates presented in sales illustrations could be manipulated by the competition to appear more advantageous than the rates offered in other carriers' products. A question emerged if other companies were playing fairly and meeting the legal standards as set forth by California law.

Knowledge from industry sources surfaced spontaneously during verbal interaction when the team examined ideas about potential products. Their general knowledge about competitors' products was applied to their own ideas for proposed products. They discussed how changes to the portfolio would impact marketability, profitability, and risk exposure.

Table 4.4 presents another segment of interaction containing specific expertise related to competitive intelligence. One of the team members was deemed the industry expert in competitive intelligence, and as the rest of the team asked her specific questions, she ably demonstrated her knowledge about the competition with detailed information about their products.

Table 4.4
Concept and Feasibility Team: Competitive Intelligence Segment 11/3/2009

Team member	**Quote**
Market research	"In doing the research for chronic illness rider, there are a number of carriers out there who obviously have more than just a chronic illness rider; they have more likened to an LTC [long-term care]–type rider. Start at the top and start with Company A. A is basically a chronic illness rider. They call waiver of surrender charge rider. They basically waive the surrender charges. No additional underwriting. They do not offer a stand-alone LTC contract."
Marketing #1	"Do they specify what kind of chronic illnesses are covered?"
Market research	"Yes, they do. They do indeed. Hospital or inpatient nursing facility for at least 30 days, and they limit the amount of withdrawals that are taken for that confinement. It is just paid to the insured. The insured can do what they want. Not tied to . . . "
Marketing #2	"This is really a critical illness. Short period of time."
Market research	"Most of them are 90 [days]."
Sales	"This isn't really—this is just a kind of nice guy—"
Marketing #2	"A nice guy rider, right?"
Actuarial	"Do you have any numbers? . . . Do you know who is the biggest seller?"
Marketing #1	"N Company and—ahh, not N . . . "
Market Research	"N Company, V Company; but see, they are using a more LTC-like rider; they are not just using an accelerated death benefit, which as a part of the criteria includes chronic and critical illness, not just terminal."
Marketing #1	"Company H is another one."

In the dialogue in Table 4.4, five of the eight team members discussed the chronic illness coverage rider that the competition offered. This form of coverage was discussed at length (beyond what is shown in Table 4.4), as it was under consideration as part of future product offerings. In their dialogue, comparisons between companies were made to help determine if the industry experience bore high potential for this rider. Once the competitive intelligence process ran its course, the discussion on future product design followed as the team attempted to design the architecture of the new product.

Expertise as product design knowledge. After competitive information was gathered and shared, the team considered how they would design the new product. As part of the design work, product specifications were decided upon by the team and documented by the business analyst. These specifications captured how the features and benefits of the products would operate. From there, business requirements were detailed in a separate meeting with a broader audience to ensure the operational aspects of the contract would function as conceived.

As an example of how a specification was discussed at a meeting, a new policy rider was proposed that would accumulate deposits made by the policyholder and be converted to additional life insurance coverage. Table 4.5 shows a segment of conversation where the team member from sales described how the flexible design of this product feature could be translated into a sales concept that would give policyholders various options as their needs changed.

Table 4.5
Concept and Feasibility Team: Product Design Segment 8/11/2009

Team member	**Quote**
Sales	"Pay PUAs [paid up additions] and then 65 switch to 'accums' [accumulated values] and work off the S&P [stock market]. Might not be a bad idea because that's when they are going to be taxed anyway, why not? Max fund a policy to get the death benefit and increase dividend and then switch it on retirement and live off the interest—especially a floor to add to it like variable, let your money grow and switch it to the index."
Product actuary	"When switch to accums does that surrender . . . "
Sales	"If $300,000 PUAs and switch from PUAs to accum and that goes to index and gets interest."

Sometimes expert opinions conflicted based on the experience and perspective held on a given topic. At times, the expertise of the team members limited their flexibility (Dane, 2010). In the following scenario, the sales member wanted to see greater latitude in a product's feature currently marketed so it would be more appealing to consumers and lead to greater sales. As part of his role, the product actuary was concerned about profitability as it related to the cost of supporting this rider financially. Both team members had their stance and reasoning as informed by their specialized expertise. As the topic discussion continued, the sales team member questioned the logic for the constraints of the product, as shown in Table 4.6.

Table 4.6
Concept and Feasibility Team: Product Design Segment 8/11/2009

Team member	**Quote**
Sales	"If I just selected a thing at the beginning of the policy and check a box ADPUA, why couldn't we underwrite that differently and let people put money whenever they want?"
Actuary #1	"We have a limit."
Sales	"Subject to the limit."
Actuary #1	"You can . . . "
Sales	"Sounds like I have to anticipate before I can use it and my question is why do I have to anticipate?"
Actuary #2	"So we can underwrite."

As noted, the existing policy rider had strict contractual language concerning the schedule of payments limiting the purchase of additional insurance coverage to certain time periods. The limits were designed to prevent policyholders from benefiting directly from increased coverage after experiencing a serious health issue. In short, a free rein of payments would add more risk exposure for the company, impacting profitability if a policyholder's health dramatically changed. The pricing assumptions of the old product would not support this potential source of financial strain; therefore, rules pertaining to additional premium payments were established. In the next segment presented in Table 4.7, sales used questioning to get to the bottom of the issue.

Table 4.7
Concept and Feasibility Team: Product Design Segment 8/11/2009

Team member	**Quote**
Sales	"The probability of my health deteriorating the next 10 years is greater than the probability of my health deteriorating in the next 10 minutes; the point is if I put in this ADPUA, they could play adverse selection game with us all they want."
Actuary #1	"But we have a limit on it."
Actuary #2	"We have a limit on it."
Sales	"I am saying there would not be a limit on it. I am saying what is the difference between 10 years from now and 10 days from now?"
Actuary #1	"Millions and millions of dollars—that's the difference."

The difference in perspective was dramatic; sales saw an opportunity to raise revenue while actuarial saw the potential risk for significant loss. In time, this team conceived and launched a new version of coverage that was priced to support greater flexibility in its payment schedule. The actuary had responsibility for figuring out the pricing of a product that had fewer restrictions along with the upside potential of gaining greater revenue. There was always risk to building new products that might be costly and

unpopular or even too popular, where pricing assumptions were inadequate to support the additional strain on the company's financials.

As part of new product design, concepts related to the financial construction of the product were often complex. Discussion about pricing was often led by team members who had an actuarial background. This complex element of product design was difficult for all the various experts in the team to grasp. Ideas for new products were based on research collected from a variety of sources. Those sources included sales rankings, market research, company illustrations, field leader and producer requests, filings, and prospectuses. Team members needed to have a good working knowledge of what the information meant and how it should be used in determining what product development was necessary. Life insurance products are not tangible such as products purchased from the shelf. Life insurance is based on a contractual promise to pay a benefit based on the terms of the contract. The promise of payment for a future event is supported by intricate actuarial assumptions that relate to pricing. Mortality tables are used to determine the policyholders' potential longevity based on risk factors such as age and gender so that financial reserves are set aside for future liquidity of the benefit. Often the construction of how the contract is supported financially is not known by consumers or even completely understood by the sales force. Whenever new product ideas were discussed, even the more experienced product experts struggled with some of the actuarial assumptions posed. In the scenario shown in Table 4.8, the actuary described how the coverage in this product operated.

Table 4.8
Concept and Feasibility Team: Product Design Segment 12/1/2009

Team member	**Quote**
Product actuary	"Pricing so that it doesn't matter accelerate the death benefit but what you get is—we are going to decrease your death benefit."
Marketing	"Ok, explain."
Product actuary	"We are going to charge you from your death benefit; you ask for $100,000, your death benefit may go down $150,000."
Senior business analyst	"Right, but you still . . . "
Marketing	"Cash value—go down the same way?"
Product actuary	"Cash value would go down proportionately."
Marketing	"To the amount of reduction."
Product actuary	"Yes. If went down $100,000 would be based on the death benefit."
Senior business analyst	"Sorry, I don't understand [laughing]."
Product actuary	"The effect on the policy values is the same as percentage on the death benefit decrease; we accelerate 100,000 we are going to charge the death benefit a $150,000 decrease. So if your death benefit is $300,000, decrease $150,000 so get $100,000 cash back—so proportional to what we accelerated."

In Table 4.8, it was the product actuary who answered the question on how the proposed product would operate and if the projected pricing would sustain its profitability**.** The new product concept was considered feasible only when actuaries reached the conclusion that it would be profitable considering development costs, acquisition costs, projected revenue, economic factors such as interest rates, and the persistency of the contract over time. Anticipating if a new product would be profitable once sold was a realistic goal. However, establishing the marketability of a product was considered more challenging, as that question had to be answered by sales management. While overall sales goals were established each year for each line of business, they were not specifically projected at the product level. One of the actuaries described the dilemma for predicting the success of any new product in this way: "We never know what revenue

we will get because it is up to distribution to sell while we know what it will cost to build."

The challenge for this product team was the risk of incurring costs to build products before those costs could be recouped and converted into profits. The feasibility of the new product also dealt with the operational impact to the functional areas within the company that needed to administer the product once sold. If the administration proved difficult to manage, it would add expense to the company's operating costs. Additional exposure related to decisions concerning how much programming would be done and when. It was commonplace to plan just enough programming so that the new product could be "saleable," which meant it had to have illustration capability and could be issued as a contract. Building out automation to service the product often became part of "Phase 2," which meant managing manual processes in the absence of automation support. This state of operations could result in errors leading to cost and reputation risk.

In one meeting there was discussion about the lack of automation for an existing rider similar to a new one the team was considering. In the segment shown in Table 4.9, interaction about the development of this new product rider led to the question of whether or not automated support would be available or if there would be a need for manual administration.

Table 4.9
Concept and Feasibility Team: Product Design Segment 11/3/2009

Team member	**Quote**
Market Research	"People are having problems even with enhanced accelerated death benefit."
Marketing	"It's no slam dunk."
Product	"We don't currently systematically support the existing accelerated benefit rider—so"
Marketing	"Not surprised! It's manually done!"
Product	"We certainly support the rider but there is no automatic process where we are doing it; someone like W is calculating."
Sales	"You get another shoe box; there is nothing wrong with the shoe box and you get another shoe box."
Actuary	"W is our automatic computer. He plugs in everything; he has his own matrix."
Product	"That was one of our thoughts, so if go down this path need to build something."
Actuary #2	"Is there something in CK4 [system], something in base code?"
Technology	"There is base code but needs to be modified for our use, but yes there is base code."
Actuary #2	"Anything for chronic illness or just acceleration in general?"
Technology	"Not in the current; I think it is 0901. It is currently in development. There will be."

In this meeting, the actuaries questioned the possibility of launching a product without automation. The technology leader, who was the source of expertise for automation, expressed that while programming code was present in the system, it needed modification. Since modifications require programming time, adding that work to the project would slow down the product launch. Alternatives to programming such as the 'shoebox' were suggested, which meant a form of manual administration.

Interviews. During interviews with members of the Concept and Feasibility Team, three main elements were identified as leading to the perception of expertise:

1. Role
2. Evidence
3. Trust

Team members referred to role, evidence, and trust when they described how they identified the expertise of their teammates. One's expertise was initially accepted based on one's role in the company; the credibility of that expertise was then tested over time by the evidence the experts provided. In other words, one's credibility was judged by articulated and factual presentations supported by reliable data. Finally, in addition to role and evidence, the subject of trust was discussed. The interviewees stated that trust was earned from the culmination of one's experience with the quality and dependability of the knowledge the expert shared.

Role-based expertise. Role is defined as the position a person holds in a company. The role has a purpose, tasks, and responsibilities. In this study, the experts in the team represented a certain discipline, and their job titles (which equated to director and assistant vice president) designated their level of authority. In the following segment, the participant expected that one's role in the organization would be apparent to others by the way the team member participated in group meetings.

> I think even if I didn't know each person's role, I think after a couple of meetings you know their role just from how they participate in the group. (Actuary, personal communication, September 16, 2010)

As a team member, one's role in the company was viewed as representing a specialized domain for the team. Each team member was expected to hold specialized knowledge and experience in key realms, such as technology and marketing, which would add value to their interactions. This expertise was relied upon by the team as a whole. In addition to one's official role, the "weight" described in the following interview response related to the level of experience in one's role.

> I think clearly in these meetings some people come with a level of expertise. There are certain people who technically have different weights at the table—that is, they're real core, like [name] on my team and [name] from actuarial. Like those two people, everyone has a role but those two individuals, just to use an example, could easily influence others based on known expertise in those areas, whether a financial standpoint with [name] or market perspective feasibility within a sales environment would be [name]—that is his strength. (Marketing team member, personal communication, September 17, 2010)

Another participant further supported the notion that one's knowledge contributes to one being perceived as an expert.

> There's people whose opinion I definitely value and there are opinions I can take or leave. Even if they have a valid point, I just don't think they know enough. (Market research team member, personal communication, September 23, 2010)

The opinion of this participant was that the acceptance of a teammate's information and opinions varied based on the knowledge of that team member. While she conceded that information can come from any team member, she stated that she always considered if the person knew enough before accepting their information. Having enough knowledge was critical for team members who were following the source of knowledge as it related to the functional area the team member represented. Therefore, if the team needed to know the best approach to market an idea, they would rely on the marketing representative unless they determined over time that the advice given was not reliable. In those cases, the team members would conclude that the team member was not an expert.

Evidence-based expertise. Team members classified expertise by how it was demonstrated. Evidence of expertise was, for example, a team member's ability to articulate an idea or his or her preparation for the discussion, including use of supporting data. Another example interviewees thought showed evidence of expertise was a member's dependability in terms of following through on action steps. Without these

factors, the team members expressed a lack of confidence in any individuals purported to be the expert in their field.

> How you know is they demonstrate it. You see what they do, they explain; it's not that they have a title, it's they demonstrate their knowledge through the context of the discussion and what they bring in terms of preparation and how we talk about it. (Marketing team member, personal communication, September 17, 2010)

> And the same with somebody in marketing, and they have a feel because they talk to this producer—you know, they have that expertise. And if you talk to somebody else and it's a question on a system or another business area or something like that and they can't answer and it's a repeated occurrence where they can't really answer the question and they're not showing that they're an expert, they're just working in that area but they're not an expert in their area. (Actuary, personal communication, September 16, 2010)

Interviewees indicated that a number of people attended these meetings to gain background on new product development. However, they remained silent and did not participate in the meetings. According to the interviewees, these individuals lacked credibility since they did not contribute to the discussions.

> Depending on your credibility that you would have more acceptance—that there would be more acceptance of your idea. . . . For example if [name] had an idea that he presented to the group, which he really rarely does unless it's a project that you know is coming, there would be more credibility for [name] to present it than maybe someone who doesn't speak very much and just comes to the meetings. (Marketing, personal communication, September 17, 2010)

Put another way, presentation and detail of an idea by the sponsor was expected when advocating something new. Without those elements, even good ideas would fall by the wayside. This idea was supported by all three members of this team who were interviewed.

> I think when they come with facts and speak as subject matter experts with confidence, I think that dynamic helps influence a team in supporting an idea. I have seen people who have really great ideas but there is nothing behind it in terms of the support or why we should pursue it, and they kind of fall before they are even discussed at any serious level. You could be a very bright person and

> have a lot of knowledge but not effectively communicate what's important in that meeting so that people notice, oh, this is something—you got something here rather than just the specifics. (Marketing team member, personal communication, September 17, 2010)
>
> Sometimes the ideas are presented better than others. I know myself I have presented some and didn't like how I presented them. So I think it could have been presented differently and maybe made more sense to the group. (Market research team member, personal communication, September 23, 2010)
>
> If your idea is something that the group hadn't considered before, you'd have to show why this was—is something that you think, that your interest in this idea has been generated from. In other words, I was trying to help an agent try and do something, and we just couldn't compete very well with X, Y, Z Company because they have this. And as a consequence, your idea may be that well maybe we should do something with our product portfolio or by rider that would help us compete in that situation or help us enter our market that we've not been able to penetrate before, and that's usually what the case is that someone has developed something where they can operate much more efficiently in a particular market than you can because you don't have a particular rider or you don't have the ability to have a high cash value. Now in those situations, you do have some documentation in that you were working with an agent and here's the illustration that you're trying to work with and you just couldn't do it. And then you—you are trying to give people background as to how the—how this all came up and what the problem was and what our limitations were and what you think you need; that doesn't necessarily mean that you can go forward with that idea, but you have a pretty good idea to the extent that people there understand what the problem is then theoretically they should be able to think about potential solutions. (Marketing team member, personal communication, September 13, 2010)

As described by the various participants, the evidence of expertise flowed from the specific details that were researched and documented to support an argument. The participants stated it was the evidence more than the organizational role that defined the expert. In their view, a knowledgeable performance was critical to one's reputation as a source of expertise. In other words, one's content expertise had to be expressed in a meaningful way so it could be distributed to the team.

Trust-based expertise. The participants expressed that it was the evidence of knowledge over time that led to trusting a source. One way evidence was manifested was

when an expert came to a meeting prepared with reliable information. Another way was when details were not known at the time of the meeting, but the expert followed through in collecting the information after the meeting. Yet another basis of trust described by participants was the sources of knowledge the expert relied upon. Sometimes a team member would rely on sources outside the team for information. If the team member relied on sources that were not credible, then that reflected poorly on his expertise. The result of unreliable information could have consequences to the timeline and even the finished product should action be taken based on inaccurate information. The participants expressed that they wanted to be able to trust the information given by their colleagues at the time of the meeting or after their colleagues had time to do further research, including consulting with others.

> When an idea comes up and you're looking for a specific piece of it, of what is the competition doing and you ask the competition person if they know and can answer it, then they're building up your trust and your faith that they know what they're doing through experience. (Actuary, personal communication, September 16, 2010)

> If historically I have gone to this person for information or a question and 99% of time they give the right answer or didn't but followed up and gave the correct answer—when you have history like that, then you tend to trust people. (Market research team member, personal communication, September 23, 2010)

One team member expressed that she could sense when people had expertise. This sensing came from experience that began to feel instinctive and intuitive to her:

> How would you instinctively know that someone is telling you the right thing, and I guess it would be from experience. Also an air about someone, an intelligence aura, and certain people have this intelligence aura. And for some reason when they speak, you listen, and then there's others who for some reason don't have that, and when they speak you half listen and don't know what makes one person different from the other. It is sort of an intuition. I don't know if it is kind of charisma and when [you] first start to hear someone speak, for some people you might say "yeah, ok, whatever" and others you are just focused [laughs]. I don't

> know why. I guess what I said before, intuition probably. (Market research team member, personal communication, September 23, 2010)
>
> How you know in the context of this meeting—it's their role per se helps them to be an expert in certain areas, and how you know is they demonstrate it. You see what they do, they explain, it's not that they have a title, it's they demonstrate their knowledge through the context of the discussion and what they bring in terms of preparation and how we talk about it. (Marketing team member, personal communication, September 17, 2010)

To review, the interviewees' comments described roles as sources of expertise that were distributed from member to member within the team. However, the participants described how the Concept and Feasibility Team's experience in working with each other carried greater weight than the role each person represented. It was pointed out that the person had to be credible, resulting from several factors such as how confidently the person in the role communicated, how effectively the knowledge and evidence of that knowledge was imparted, and how an argument in favor of a new idea was presented and bolstered with supporting data. Several participants expressed strongly that their team interaction depended on the expertise of their counterparts but that the expertise was not based on role alone; it had to be credible and reliable based on their firsthand experience with the team member. Trust developed when team members demonstrated efficacy with their subject matter over a period of time.

Shared Leadership

All participants in this team had responsibility for a portion of the new product development process resulting from their representation of a functional area within the team. The meeting participants were clearly peers, as their authority level was equitable and each of them had the same opportunity to influence. As Cox et al. (2003) noted, "The agents of influence are often peers of the targets of influence" (p. 56). This section

presents the findings as they relate to the theory of shared leadership, first through data gathered by observing team interaction and then through interviews with Concept and Feasibility Team members.

Meeting observations. Three major occurrences of leadership surfaced in team meetings: (1) creative exploration, (2) collective agreement, and (3) collective disagreement. Each is reviewed below.

Creative exploration. Shared leadership theory posits that interactive, collective influence and group interaction unfold as team members respond to each other and accept responsibility for decisions and actions (Drath et al., 2008). The observance of creative exploration supports this theory, as it concerned questioning, responding, "pitching" ideas, and building on each other's creativity to support new product development. The interplay of questions and responses between and among the team members focused on the product features and the operational aspects of the product.

To illustrate the manifestation of shared leadership in this team, the segment in Table 4.10 shows how each person influenced the discussion by adding pieces of facts that together constructed the full picture. In this scenario, the social process of sharing information and ideas continued until everyone came to the same conclusion in a single harmonious voice.

Table 4.10
Concept and Feasibility Team: Creative Exploration Segment 12/1/2009

Team member	**Quote**
Actuary	"Whatever our definition of chronic condition is, does it qualify as a waiver?"
Marketing	"Ah, good question."
Market research	"Not necessarily; I don't think so. Depends on the waiver."
Marketing	"Depends on the age."
Market research	"After 65 would not have a waiver."
Marketing	"That's correct."

Team member	Quote
Actuary #2	"Can do it with UL [universal life]."
Market research	"Guaranteed COIs [charges of insurance]."
Actuary #1	"How is this different from CVAT [cash value accumulation test], though?"
Market research	"That's what it is. That's exactly what it is. Basically what we do is use premium; then for a charge factor continue to charge; we shouldn't . . . "
All	"Charge you."

As part of creative exploration, the team explored how the new proposed product would operate. One member strongly questioned why the current product worked as designed, as it was to serve as the foundation for the newer proposed product. He challenged the status quo, hoping to liberalize the features of the proposed product that the older product was based on, as noted in Table 4.11.

Table 4.11
Concept and Feasibility Team: Creative Exploration Segment 8/11/2009

Team member	Quote
Sales	"I'm coming back to my basic question: Why couldn't we, with some limitations or something, I am truly asking this—why couldn't we create something some time that is workable with us if you want to put in extra money, put in extra money?"
Actuary #1	"We allow you if you submit to underwriting; if you want to exceed your 20 times premium limit."
Sales	"But what I am getting at is . . . "
Actuary #2	"Your question is if I follow all the rules with the ADPUA, why can't I put PUA at any time? Isn't that your question?"
Sales	"Or if I buy a whole life policy and . . . "
Actuary #1	"Just answer the question."
Sales	"I don't know what the question is!" [laughter from all]
Actuary #1	"Your question is if you follow all the rules of the current ADPUA."
Sales	"What are the current rules?"
Actuary #2	"Has to be less than 200% of premium years; had to have to be funded at issue."
Sales	"Why?"
Actuary #1	"And had to be started at the start of issue."
Sales	"Why?"
Actuary #2	"Don't want you to dump in money when it is insurance."

While the questioning continued to challenge the rules, the actuarial member provided the reasoning behind it. This interaction gained momentum with the give and

take of questions and responses. While the sales member attempted to influence the outcome of the discussion so a future rider would be built with more flexibility, one of the actuaries settled the discussion with "don't want you to dump in money when it is insurance." Insurance, as a tax-deferred vehicle, has legal limits as to how it can be used monetarily.

Collective agreement. Agreement was a theme that emerged as part of shared leadership as a form of lateral influence. This team dynamic occurred regularly as interaction was enriched with team members making it explicitly known that they were agreeing. Agreement was often displayed in the form of repetition of other team members' comments, as displayed in Table 4.12.

Table 4.12
Concept and Feasibility Team: Collective Agreement Segment 11/3/2009

Team member	**Quote**
Marketing #1	"How many people do they have doing it?"
Marketing #2	"They have a lot of people."
Competitive intelligence	"They have a lot of people."

In a separate meeting, more repetition of words was displayed, as presented in Table 4.13.

Table 4.13
Concept and Feasibility Team: Collective Agreement Segment 2/9/2009

Team member	**Quote**
Marketing	"A disability benefit would be tax free."
Competitive intelligence	"That is what I would think. If took income . . . "
Marketing	"If took income . . . "

Collective disagreement. It was observed that disagreement occurred whenever there was a difference of opinion concerning a product-related concept. Disagreement introduced a different tone into the dialogue and expressed a lack of support for ideas or

discussion points. The segment in Table 4.14 presents how a difference of opinion unfolded when introducing the idea that products are too complex for the average consumer.

Table 4.14
Concept and Feasibility Team: Disagreement Segment 8/11/2009

Team member	**Quote**
Marketing #1	"We were in a meeting—they talk about the trust gap in financial institutions. Because the products are complex and not transparent, not easy. So lack of faith. So is there something simple, get people in the door with? If we don't understand the product, my God, . . . how are we going to get them in the door. To me there is a real problem, and that is why I am trying to see term convert to UL [universal life]. I can see that, return of premium, I understand that. A lot of these are a lot of business applications, I am not supposed to understand that, but still our products are really complex."
Marketing #2	"Most agents would say that's not their job to educate; don't want to educate the client. Just confuses the sales process."
Marketing #1	"Sure term is simple."
Marketing #2	"And everything else is whole life; this is indexed UL."
Marketing #1	"But if I am a client and I don't understand the product, I don't trust you."
Marketing #2	"I don't think that is true."
Marketing #1	"It is easier to trust someone when you understand the product."
Sales	"Complexity, I agree with you; usually a client . . . if an agent is doing his job this feature product with give you 'a,' this feature product will give you 'b,' and this feature will give you 'c'; you don't care about 'defghijlmnop.' The reason you should buy this is because you told me you want a, b and c."
Marketing #1	"If we already have a relationship that works; but if I don't know you, don't think so."

Disagreement was a strong influencing factor in team meetings as Table 4.15 demonstrates. The team member from sales spoke aggressively at times, which moved the conversation into a different direction, ultimately killing the idea.

Table 4.15
Concept and Feasibility Team: Disagreement Segment 8/11/2009

Team member	**Quote**
Marketing	"Some buy-sells just want death benefit in case someone dies; some want to buy interest of business a cash value, or it might satisfy just a death benefit."
Sales #1	[Jumps into discussion quickly while having arrived late to the meeting without having heard most of previous discussion] "I want a buy-sell agreement to pay an insured. I get no death benefit. Who cares?"
Sales #2	"Brothers or something like that."
Sales #1	"So what? No purpose of a buy-sell. The whole purpose of a buy-sell, it's a first death thing, usually when you have left first death which disappeared from the face of the earth because you were only underwriting the bad risk."
Sales #2	"Yeah."
Market research	"That's true."
Sales #1	"I find it difficult to believe from a practical standpoint that an older age person, people, that are looking to buy survivorship life, which is typically going to be in an estate liquidity sale if they have enough assets, that they are concerned [holding laughter] about estate liquidity I can't believe, [hitting the table], . . . I have never [emphasis] since we've had survivorship life had someone at an older age say we can't afford that."
Marketing	"It's not that they can't afford it, it's that we really aren't competitive when you have one life uninsurable and they would easily have the money for it someplace else."
Sales #1	"If we're not competitive . . . "
Marketing	"We're better when we were nowhere near what other companies do."
Sales #1	"Sounds to me like what we need to do is tweak the pricing of the ratings, not develop a product that no one is going to use. I think there is a reason why most companies don't have survivorship term [holding back laughter]."
Marketing	"We didn't necessarily . . . "
Marketing #2	"We are just initiating a discussion . . . no attacking." [laughter]
Sales #1	"Not attacking, just don't see it's something in the real world that people are going to use."
Marketing	"That was pretty much A's first comment."
Actuarial	"If we don't want to talk about it, that's fine." [group laughter]]
Actuarial	"I think there would be a ton of strain; I doubt we could be competitive."
Marketing	"No big deal to me."

This argument shut down the conversation between the actuary and the marketing expert who shared the idea initially. It started out as challenging the original premise and then escalated with assertive body language such as the raising of voice, pounding on the table for emphasis, and making a stifled laughing sound that punctuated points made. The others withdrew from the discussion with comments such as "if we don't want to talk

about it, that's fine" and "no big deal to me." One of the other team members tried to defuse the dialogue—"no attacking"—but was rebuffed with the quick reaction "not attacking." This segment illustrates the influential give and take that occurred in this team.

Interviews. During interviews of members of the Concept and Feasibility Team, patterns emerged as team members described team interactions. One pattern that seemed particularly strong was "creative exploration," as team members pointed out that they worked on creatively exploring ideas together.

> I've worked at lots of different companies, and at this company actuarial drives and owns product. I really think that if you can get the actuarial team on board with what you're trying to do and have them understand that (a) you can drive sales, and (b) you can be profitable, and (c) that we can do it in a way that perhaps will enhance our company's ability to grow, then that's a really good thing; that's a home run. (Marketing team member, personal communication, September 13, 2010)

The response from the marketing representative revealed that there was a need to influence the actuarial members of the team as they "own product" and were responsible for the profitability of any new launch. The following statement from one of the actuarial members describes how interaction, high engagement, and agreement by team members led to momentum for ideas.

> If you have an idea, you're discussing something, and somebody comes back and is like "that's a great idea" or even if they don't say that but their reaction is they're more involved and engaged and participating, that's usually an indicator that they're behind the idea and that there's some merit to it. (Actuary, personal communication, September 16, 2010)

This team member acknowledged that even when the words were not explicit, the body language could signal support for an idea. Another team member described how

shared leadership occurred by way of building upon each other's ideas through interaction:

> Because some of the ideas are not something that was well thought out before but—or just things that come up as a result of someone else's initiative, you know, or someone else's idea and it's a counter idea or an add-on idea or some different take on what someone has presented. (Marketing team member, personal communication, September 13, 2010)

The team's interaction was based on ideas presented and shaped further by building on those ideas and modifying them until they became a product created by the entire team. However, while creating new ideas was a key objective, the team also had to balance its ideas with the reality of capacity and assumption of cost. Addressing the feasibility of any ideas was also this team's responsibility.

> The cost of having to change things, like from a marketing perspective we want to change x, y, z, it is a minimal effort, but the cost to market it is exponential—that could be a reaction, positive or negative. The team members could sort it through, work it through—it doesn't mean it would be a "no go"; it just means that they have to work something out, and 9 times out of 10 they do. (Market research team member, personal communication, September 23, 2010)

Summary of Findings for Research Question 1

The aim of the Concept and Feasibility Team was to generate ideas for profitable new products for their company. The team's diverse membership ensured that the major parts of the company were represented by people who would collaborate and provide the knowledge needed to research, innovate, and make decisions. While expertise and shared leadership have been summarized separately, it is noteworthy that they occurred in team meeting interactions simultaneously.

In the meetings, as agenda items turned to topics related to competitive intelligence and product design, they proved to be especially complex, requiring the team

members' expertise to explain and understand the concepts proposed. Shared leadership as social influencing was apparent when team members participated in coordinating the agenda, engaged in questioning, responded to one another's questions, and interacted in particular ways for persuasion purposes.

Use of language in order to persuade team members—for example, "I have *never*"—and increased volume of voice as well as other physical methods to emphasize one's points in the discussion—for example, hitting the table—were ways team members influenced their discussion. Humor was also introduced into the dialogue to defuse conflict or for self-deprecation purposes when the complexity of the subject matter challenged the team's comprehension.

In contrast to these expressive modes of communication, expertise was presented as specialized, knowledgeable, and factual information accompanied by reasoning that resulted from one's role, experience, and area of responsibility. Knowledge associated with actuarial science, new product development, marketing, and technology made up the main ingredients to ensure a successful product concept. In addition, the expertise to project proper pricing and sales assumptions was viewed as imperative to ensure the product ideas would be profitable for the company.

During interviews, role, evidence, and trust surfaced as key discussion points. Team members saw a clear relationship between expertise and each of these concepts. Initially, team members expected to find expertise based on the professional role of a team member. However, while one anticipated expertise based on one's role, it had to be supported with evidence over time. An example of evidence included a reliable presentation of facts and demonstration of dependable behavior. As a result of the role

one played and the evidence that was provided over time, trust in their colleagues' expertise was assured.

Valid information from individuals purported to be knowledgeable in the various functional areas of the company was an important requirement for the team's success. When information was proved inaccurate, incomplete, or unreliable or when reasoning was unclear or flawed, team members said they hesitated to follow that source. Expertise based on one's role was assumed unless experience with that team member proved otherwise. It was expressed that with time the evidence would prove if a source was reliable or not and if proven untrustworthy, that source experienced scrutiny and skepticism by the team. Therefore, observations of team members discussing facts, figures, and information was one manifestation of expertise as it related to competitive intelligence and product design. The deeper opinions of the team members about their counterparts resulted from interactions over time and further defined how they viewed genuine expertise.

Shared leadership activity was commonly noted as the team coordinated the exchange of dialogue and influenced its direction and outcome. *Creative exploration* was a common pattern of conversation, as it concerned the questioning and responses made by the collective that led to even further questioning about the concepts discussed. A lively interaction in the team led to a variety of building and modifying concepts that were introduced into the discussion. *Collective agreement* was a pattern denoted in team interaction manifested by repetition of phrases and the filling in of incomplete statements by the speaker's teammates. *Collective disagreement* was characterized by the occasional lack of support for the discussion at hand accompanied by body language ranging from

increasing voice volume to pounding the table. These tactics proved to be influential during team interaction (as illustrated in Table 4.15), when team members compromised their earlier advocacy with "if we don't want to talk about it, that's fine."

Table 4.16 summarizes the themes that were noted for the Concept and Feasibility Team.

Table 4.16
Concept and Feasibility Team: Summary of Themes for Research Question 1

Research method	**Expertise**	**Shared leadership**
Meeting observations	Competitive intelligence and product design knowledge showed evidence of expertise in the team.	Examples of peer influence included creative exploration, collective agreement, and collective disagreement.
Interviews	Interviews highlighted the contrast between expertise designated by a specialized role versus expertise arising from evidence of expertise. Trust facilitated the reliance of the team on reliable experts.	Creative exploration surfaced as an example of the team's responsibility.

Research Question 2: Concept and Feasibility Team

The way expertise and shared leadership occur in team interaction has been described and illustrated with examples. The next question asks how the relationship of the two phenomena presents itself in team interaction. Two main themes arose. The first is the relationship between the complexity of the team's discussion and their reaction to the discussion with humor, illustrated primarily with meeting interactions. The second theme is idea generation limited by risk avoidance, illustrated primarily with interviews.

Relationship Between Complexity and Humor

Sometimes the subject matter became complicated and spanned an expanse of knowledge not held by all members of the team. In these situations, team members

commented when they had trouble following the discussion. In order to conceive and launch competitive products, it was considered necessary to have a cross-functional team resourced with experts across the organization. However, there were times when the details of their discussion required specialized knowledge in order to expertly follow the argument. A typical reaction to complex discussion included humor, which brought a little comic relief when the discussion became difficult to discern. Shared leadership theory addresses the "social give and take" as part of peer influencing (Pearce & Conger, 2003). In the case displayed in Table 4.17, the sharing of humor was used as a tactic by two team members when the dialogue became particularly complex.

Table 4.17
Concept and Feasibility Team: Complexity-Humor Segment 12/1/2009

Team member	**Quote**
Marketing #1	"I'm searching my brain [laughing]. Throw his little equations out."
Product actuary	"Present value of premiums minus value . . . "
Marketing #2	"I am getting a headache now."

In another meeting segment, two marketing team members poked fun at their creative process, as displayed in Table 4.18.

Table 4.18
Concept and Feasibility Team: Complexity-Humor Segment 8/11/2009

Team member	**Quote**
Sales #1	"I think we came up with a great idea; we don't know if people will buy it, can't illustrate it and can't administer it. This is the product idea of the century; this might be the best idea we ever came up; and they are not going to trust us to sell it to them. This thing is perfect. Full speed ahead! Damn the torpedoes!" [group laughter]
Sales #2	"It fits in with everything else!"
Sales #1	"This is just perfect!"
Product actuary	"I think you just sold me on it."
Marketing #1	"I understand it."
Marketing #2	"It would be easy to illustrate!"
Sales #2	"I am going to go down the basement for my 'College Protector 1970.' [group laughter]

Complex subject matter often resulted in a lack of understanding of the more technical aspects of team discussion. Generally team members joked about their inability to grasp the finer details of the discussion. Introducing humor as a team dynamic helped the team adjust to those moments when the topic became difficult. After the expression of humor dispelled, the discussion continued and serious brainstorming resulted, as illustrated in the segment displayed in Table 4.19.

Table 4.19
Concept and Feasibility Team: Complexity-Humor Segment 8/11/2009

Team member	**Quote**
Market research	"You could easily illustrate—put a variable for term, adjust it for bands."
Sales #1	"Be easier than a term rider; no different than interactive term rider."
Sales #2	"Easy illustration."
Business analyst	"Every period have to have a letter."
Marketing	"Give them the right to say no."
Market research	"Define that up front though."

Limitation of Idea Generation by Risk Avoidance

The Concept and Feasibility Team learned from implementation hurdles in the past, which sometimes influenced decision making on new development. While lessons from past mistakes provided learning opportunities, team members recognized the challenge of not allowing those experiences to limit the unfolding of their creative thinking. An example of this concern is noted below.

> I guess the influence it has at least on myself would be—you know, when we're coming up with new product ideas we're gaining experience from Tactical [team] of how certain products have gone through the process and run into different issues, be it that we didn't have enough conversations up front or just the complexity of the product or just learning about different systems issues or process issues, things like that. So I'd say they probably influence it that way but really product ideas, we try not to let that influence it but you know it—it does. It's—you know it's kind of built up in your memory of issues that you've had in the past or things that went smoothly in the past. (Actuary, personal communication, September 16, 2010)

Since some of the members of this team were also members of the Tactical Team, whose meetings focused on project execution, issues that arose during development sometimes dampened idea generation. While their participation had many advantages, such as their commitment in seeing the project succeed all the way through to its execution, one disadvantage was the knowledge of what went wrong in the past, which they felt curbed the creative flow of new product ideas.

> You're spending all this time and all of this theoretic paper money, and it still might not work, so you know your risk has increased dramatically that you're spending all this time and money and it still might not work. (Marketing, personal communication, September 13, 2010)

Summary of Findings for Research Question 2

In summary, two themes surfaced in the analysis of the relationship between expertise and shared leadership. The first one is topic complexity and the team's reaction to the complexity with humor. The second one is idea generation limited by risk avoidance.

The Concept and Feasibility Team dealt with complex discussions frequently. As a means of reacting to complexity, the team often made humorous references to the difficulty of the concepts. The team reacted positively to the humor with jokes and laughter and was then able to recover their focus on the topic discussed. Generally, the actuary in the team would state additional facts that clarified the issue. Expertise had a positive relationship with the complexity of the discussion topic, as it was the relevant knowledge at the right moment that illuminated the team's understanding. However, it was the team's humorous interaction as part of their social process that shared leadership encouraged.

The team's name, Concept and Feasibility, captured the dual purpose and nature of this team. Sometimes, the team's responsibility to consider feasible products interfered with the team members' ability to think freely about possibilities. In addition, any past experiences the team had with complicated product launches hindered their ability to be open to various ideas. A few team members admitted to worrying about being overly cautious when they should be focused on creativity. In this case, the responsibility of this team to select only projects that were feasible and potentially profitable in conjunction with their knowledge about outcomes of previous launches influenced the team's free flow of ideas.

Table 4.20 summarizes the main findings for the second research question in the context of the Concept and Feasibility Team.

Table 4.20
Concept and Feasibility Team: Summary of Themes for Research Question 2

Method	**Distributed expertise**	**Shared leadership**
Meeting observations	Topic complexity led to deference of expertise.	Topic complexity led to humorous comments and oversimplification of issues.
Interviews	Risk avoidance was the outcome when profitability was a concern.	Creativity of ideas was sometimes hindered by experiences of past product development initiatives.

Research Question 1: Tactical Team

As experts and authorities in their particular disciplines, the members of the Tactical Team were accountable for the implementation of new product ideas. While the team members represented differing sources of expertise, they all had the same level of authority. This team was responsible for moving decisions and tasks forward to ensure the product development process was adhering to schedule. What follows is a discussion

of the observations of how expertise and shared leadership were manifested in the team meetings and interviews with Tactical Team members.

Expertise

Meeting observations. Expertise was required in team meetings to provide guidance and direction about the topic at hand. In a team meeting, when a topic required specialization, the question was asked as to who had the expertise to provide information about a particular practice. If the expertise was not present within the team, an expert source was directly requested, as illustrated in the dialogue shown in Table 4.21:

Table 4.21
Tactical Team: Expertise Segment 6/10/2009

Team member	**Quote**
Product actuary #1	"Who is the expert of helping to guide how it should be issued? What are the best practices?"
Business analyst	"I don't know. I did find some information on the web that I sent to T. Don't know if we have an expert internally—may be looking for one."
Product actuary #2	"L would be the closest we have."
Business analyst	"She is fully engaged on the fixed annuity side."
Product actuary #1	"What is the best practice and how should it operate. Is that L or should we make a call to K?"
Product actuary #2	"L knows about as much as anyone. K probably knows it inside out."

Overall, two themes relating to the occurrence of expertise in the Tactical Team were detected in team observations. The two themes were *delivery of product specifications* and *product status.*

Delivery of product specifications. This occurrence of expertise was about understanding the product specifications and determining how to automate or manually administer the new product. The complexity of the product was revealed in the course of building new capability to support the product's operation. Sometimes the product expert oversimplified how to administer a complex, multifaceted product by concluding that it

only required a rate table change. The product expert knew how the product should work at an abstract level. In contrast, it was the pragmatic knowledge of the programmer that defined what development was needed to support the mechanics of the new product. The dialogue in Table 4.22 demonstrates how this interaction played out.

Table 4.22
Tactical Team: Delivery of Product Specifications Segment 7/22/2009

Team member	**Quote**
Technology	"That is a manual process and pretty big servicing issue and would need process flows."
Marketing	"As well as inherent risk we are taking on if a mistake is made to a contract."
Technology	"And I can't tell that base admin system is going to support that off the top of my head."
Marketing	"What we thought was going to be a simple no-brainer—'let's just tweak the product' to help the life sales—is actually—"
Technology	"Getting more painful"
Marketing	"Than we ever imagined."
Technology	"Kind of goes back to was supposed to be a slam dunk but not feeling like a slam dunk."

Even the technology leader wasn't always sure of the degree of complexity of a change until a full analysis was conducted. The following statement from one of the meetings illustrates this circumstance:

> It is not ideal and fraught with potential errors, and I can't guarantee building that override is as simple as it sounds, because depending how deep in Cyberlife, how far this thing starts reaching, it could be really ugly. I don't know that for sure. I can't be sure—talked with some other folks; we don't know yet. This needs to be looked at. (Technology team member, Tactical Team meeting, (9/17/2010)

Expertise answered doubts when they arose during the assessment process of implementation. When the expert did not have the information at hand, it became necessary to involve other technical resources to analyze the difficulty of building a new system's function to support a new product feature.

Product status. It was the aim of the Tactical Team to report the status of product work and related projects. Information included what developmental stage the initiative was in, whether it was on schedule, and if there were problems that would impact its delivery. In the segment in Table 4.23, this particular discourse occurred at the beginning of the meeting.

Table 4.23
Tactical Team: Product Status Segment 6/10/2009

Team member	**Quote**
Product actuary	"Ok. Any open items from last time? I think one of the key open items is the discussion on ABIUL 09 from last time, so we'll be talking about that with the product issues. And then the Internet piece was also an open item that everybody was supposed to respond to S by the 12th."
Product analyst	"I got some."
Product actuary	"Ok. And anything next?"
Actuary	"Next steps on the Internet?"
Product actuary	"Actually that's next on the agenda! [laughing] Do you want to segue to that? Ok good!"
Product analyst	"Subcommittee is meeting tomorrow and starting with the whole list of everything we would like to see on the Internet regarding product and how we are going to divide it up in phases and what do we think is a reasonable first phase. Because it is going to be a lot of documentation gathering effort—conquer it up into phases. My preference would be to start with active products—accurate documentation so there is less work. Then divide and conquer and who is responsible for gathering documents and once we identify how much effort—come up with first phase/launch."

Often an update was provided through dialogue between two team members, such as the one asking for the update and the person who had the knowledge about the status. In Table 4.24, however, a total of five team members participated in the updating process, as each person had some information about the project.

Table 4.24
Tactical Team: Product Status Segment 7/22/2009

Team member	**Quote**
Project Manager	"Next one, dividend option."
Business analyst	"We're a little concerned on delivering requirements but they are ready. It turns out to be a smaller effort than we thought. The biggest effort is the coordination. We are only going after a certain number of states approved, and we need to get in the illustration system, but the only time it can go in the illustration system and the only time we can get in is mid-October."
Actuary #1	"Is it a fixed page?"
Business analyst	"It is fixed. Not an impact to the variable page."
Actuary #1	"That should reduce the work."
Business analyst	"They are ready to deliver, but do we deliver them to IM&T (Information Management and Technology)? I don't know how to deliver these; it's different."
Actuary #1	"I think N is filing them."
Business analyst	"As we speak . . . "
Actuary #1	"Yeah. It's on the white board that she is filing them."
Project manager	"I haven't seen her."
Actuary #1	"She was in yesterday and the day before."
Actuary #2	"Do we have requirements for the number of states?"
Business analyst	"I thought you said we had to go October."
Actuary #1	"Well, because the further you wait—they need the rider beginning of fourth Q to be able to sell."
Business analyst	"Do they need to illustrate it?"
Actuary #1	"Yeah."
Actuary #2	"They need to illustrate it more than they need to issue it."
Project manager	"Now that business requirements are complete we can get organized."
Business analyst	"Yeah, they're ready."
Project manager	"Qualify—I have still not seen an invite."
Marketing	"She made a reference that they'd like to have it next week but really probably the following."
Actuary #1	"It isn't going to be next week or the following. She is out 2 or 3 weeks."
Project manager	"We don't have the specs for July."
Actuary #1	"I thought the only issue left was the endorsement—people going back and forth on the wording."
Project manager	"So we're officially past July."

Each person had different bits of information, and as the debriefing unfolded, deliverables projected for specific timeframes began to appear compromised. The team's expertise of operations emerged as interaction about the topic. A key resource's absence

was expected to further add to unanticipated delays. As a result of this collective debriefing, the team began to recognize that the target date was in danger.

Another example of how product status reporting led to the uncovering of an issue is illustrated in Table 4.25.

Table 4.25
Tactical Team: Product Status Segment 6/10/2009

Team member	**Quote**
Project manager	"First up is VUL [Variable Universal Life], doing some last-minute testing on a couple of issues that are in model office. Going to get sign off for that. Biggest thing is after admin testing, which is what we are doing, we will have to run transactions policies with CVER [Cash Value Enhancement Rider] through compensation testing, DCM [Distribution Channel Management] testing, and some of the downstream systems. Because been late it is turning out the resource, K, for DCM testing is having a hard time actually testing that."
Actuary	"Because of other things."
Product actuary	"Replacements . . . "
Project manager	"Not internal replacements yet; account rec [reconciliation]."
Actuary	"She's the only comp [compensation] tester?"
Product actuary	"Yes."
Product analyst	"Yes."

The above interaction first described the tester as someone having a "hard time" testing. The actuary attributed the difficulty to "other things." It became clear that "other things" meant other projects. As the interaction continued, it became apparent that the problem was that the tester was the only one with the qualified skill to test changes in compensation. This resource contention was expected to delay the overall implementation of the project.

Interviews. In order to compare findings based on meeting observations, interviews with several team members were conducted to learn more about their viewpoint as it related to expertise and leadership. All participants asserted that people in the teams respected expertise and were influenced by it rather than by any other team

dynamic including leadership. The following excerpts taken from team member interviews emphasize respect for expertise.

> Absolutely, clearly expertise. (Technology team member, personal communication, September 17, 2010)

> Tactical team is influenced by expertise. (Business analyst, personal communication, September 23, 2010)

> It goes along with sound judgment. If it's coming from a trusted voice, over time they've shown that [expertise] and that is why I use that term expertise. (Systems assurance team member, personal communication, October 22, 2010)

According to the technology team member, the entire team was made up of experts. He believed that it was the team members' expertise that drove information to decisions. He described his experience with the team in this way:

> They clearly know what they are talking about and have been doing it successfully for a long time. Clearly they are capable of addressing the topics at hand. No doubt in my mind that people sitting in that room are experts. How detect that? By the decisions and information they provide. Very clear—tends to not waver as far as the information goes. As far as information goes, it is clear those people know what they are talking about. No different than I know IT [information technology], I know programming—building systems is building systems. So I bring that to the table. Now I still have to go outside; that's okay, that is still part of the process. The how also is once we make an agreement to move forward, all the right pieces are there. Rarely is there a 'whoops I forgot about that'; I have not experienced that here at all; where somebody really was not an expert, that would happen more frequently. And that does not happen. Once we pull the trigger, we shoot the starting gun, it happens. (Technology team member, personal communication, September 17, 2010)

Product complexity. Product complexity surfaced as an issue when the new product idea was oversimplified by some of the team members. The person who was not the source of expertise for the construction of the product was often the one who oversimplified the complexity of the effort.

> And there is an interpretation process because of various levels of expertise in the room. As an example to R and rightfully so, "Well, it is on a table; change it." It

> usually is not that simple, and he knows that now, but it drove him crazy for a long time until I was able to demonstrate to him some of the complexity of how this works. But I do worry about the expertise of our project managers. I also get concerned that product actuaries think they may know how the system works and they may not, and that is really the job of the more granular team, and that is where I struggle with the project managers: If they don't understand, pieces could get missed. (Technology team member, personal communication, September 17, 2010)

At times, the team members had difficulty following the complexity of the discussion and yielded to the expert to make the decision.

> Because of the overall history and the experience, and many times they may be the only person in the room that knows anything about the topics, they have a real close knowledge. And it's a special world in this, and they may know so closely to what they're talking about that it loses people, and then we kind of just defer. (Systems assurance team member, personal communication, October 22, 2010)

Credibility of expertise. Several of the interviewees revealed that a team member's credibility was a serious matter. According to interview responses, credibility of one's expertise resulted from a team member's verbal presentation skills, data that supported the argument, and the team member's follow through on a promise to collect more information or take action. When experience with a team member demonstrated shortcomings in any of these areas, it diminished the validity of his expertise.

> I think it has to be information that the group feels is factual and not just an opinion and that it is presented in a way that can be understood by the other people in the room. (Business analyst, personal communication, September 23, 2010)

Several team members mentioned that they were not influenced by team members who lacked credibility. In fact, they responded to these sources by rigorously questioning, challenging, and at times rejecting their ideas. Two examples of this issue were described in this way:

> The cases I am thinking of, the person at the table has brought the information and I am not sure that it came from the source that has the accurate information. I will get cases that I will go along with a decision and cases where I challenge. And where I am challenging is often because I am not comfortable that the person sitting at the table with the information and responsible for that level of expertise has consulted the people with the lower knowledge necessary. (Business analyst, personal communication, September 23, 2010)

> Sometimes when someone demonstrates that they're speaking beyond a topic of comfort as if it's comfortable to them . . . I think that tends to turn people off. And then so long as they latch on . . . they almost want to prove a point of their knowledge, and I'd say "Boy, that's just not right." So if I'm not comfortable in understanding a product's rules, I may be less . . . and then have been times to say, "Boy, I'm not willing to take a risk." (Systems assurance team member, personal communication, October 22, 2010)

Shared Leadership

Meeting observations. Three themes arose from meeting observations that align with shared leadership theory. They are *following meeting protocol*, *collective agreement*, and *collective disagreement*.

Following meeting protocol. Keeping to the agenda was strictly adhered to so all the items would be updated within the tight 90-minute timeframe. This theme is about following meeting protocols such as introducing new agenda items, accelerating the pace of the meeting, and closing a topic, as presented in Table 4.26.

Table 4.26
Tactical Team: Protocol Segment 7/15/2009

Team member	**Quote**
Actuary #1	"Aren't there a couple topics we didn't get to because S wasn't here?"
Business analyst	"I was wondering, as it didn't get on the agenda. EMAX 2 correction, I was going to bring it as a walk-on item. Do we want that at the end?"
Actuary #2	"Yeah that's fine. EMAX 2?"
Business analyst	"EMAX 2 correction."
Actuary #2	"And there is also another one I wanted to talk about was term, and so we will talk about terms and conversions at a minimum face. So that's it? Ok. Internet?"

Maintaining a meeting structure was important, as it supported the progress the team needed to make. The segment in Table 4.27 illustrates a side conversation that involved scheduling a meeting around two members who were not going to be available on the same day. This scheduling challenge required a decision on how to coordinate activity with alternatives.

Table 4.27
Tactical Team: Protocol Segment 6/10/2009

Team member	**Quote**
Project manager	"Can I interrupt? When G popped her head in before, W went home sick so meeting will be rescheduled. To answer your other question, there is another DCM issue and trying to resolve in next day or so. G is out Friday too."
Product	"She is out Friday?"
Technology	"I will pick up the ball to facilitate that meeting. G doesn't have to be there. She wants to be there; I can talk with her. If W is here, we can have the meeting."
Project manager	"She still wants to talk with you; that may be why she did not cancel. She still needs to reschedule it."

Collective agreement. When team members interacted, there were instances when agreement was displayed. Repetition of words and phrases by more than one team member was one overt indication of agreement by the team. The filling in of phrases was another manifestation of agreement. Often participants would build on each other's statements that would clarify or expand upon the earlier speaker's points. The team's social process of sharing, influencing and, ultimately, agreeing supports the theory of shared leadership. To illustrate this occurrence, the segment in Table 4.28 is an example of how agreement was displayed in team interaction.

Table 4.28
Tactical Team: Collective Agreement Segment 7/15/2009

Team member	**Quote**
Project manager	"Roth IRA: is the info session set up?"
Technology	"I have not noticed it yet."
Business analyst	"I have not either, but you're right we should be seeing that session."
Technology	"Seeing that session."
Project manager	"The other two, I don't know if there's anything happening in July here."
Business analyst	"Oh, the Maine endorsement is well under way."
Technology	"Yep."
Business analyst	"Had awesome project plan on that. I was really happy with that."
Technology	"We have a good project plan, good requirements; we have resource slated to start working on this next week."

Collective disagreement. While there were many instances of agreement, there was also evidence of disagreement in the team's dialogue. In Table 4.29, the marketing representative disagreed with the suggestion of changing the name of a new version of a product that was already well known in the marketplace.

Table 4.29
Tactical Team: Collective Disagreement Segment 6/10/2009

Team member	**Quote**
Marketing	"Yes, we originally thought we were all set [laughs] maintaining the accumulation builder IUL name, and I guess there was a meeting last week. It was brought up because we're changing the fixed interest rate account the way we display the interest rates by product having the same name, as the existing product is problematic. So I wanted to talk through that with the group, ahhh . . ."
Actuary	"Also there was something else too, right . . . with the—"
Marketing	"Well, I wasn't at the meeting . . . "
Actuary	" . . . with the business form if you wanted to switch products we had with another one—"
Marketing	"Well, you can't switch with the old product."
Actuary	"I don't want ABIUL 1 anymore; I want ABIUL. This will really be a problem so needs to be reworded."
Business analyst	"Well, that comes up every time we have a reprice."
Actuary	"Another big problem."
Business analyst	"I think there are other ways to solve that problem. I wouldn't change the marketing name for that reason and at this stage."

The assertion made by the marketing expert gave strong direction concerning the renaming of a product. As noted in Table 4.30, she took a position that influenced the rest of the team as she emphasized the seriousness of the situation with her voice and choice of words.

Table 4.30
Tactical Team: Collective Disagreement Segment 6/17/2009

Team member	**Quote**
Marketing	[cuts in] "Our strong preference is not to change the marketing name. Accumulation Builder is actually a name that has become fairly synonymous with [company name] as one of our leading products out there. I mean, if you look at the industry report, we went from 12th to 5th in terms of index providers, so you know our goal would be not to rename it, and that was kind of the position that I was taking."
Product	"Yes."
Marketing	"The team felt that if we needed to rename it, probably what R was suggesting that I was giving him the face on is that maybe doing the numeric would be closer, but that really doesn't. One of our strategies with naming is kind of to be clear with what it does so having a II at the end of it, while it may help us that it's the second reiteration of the product, doesn't really tell anyone, so our—"
Actuary	"T-O-O."
Marketing	"Little eyeballs in it." [group laughter]
Product	"A new branding!"

The use of humor defused the tension in the room when the team member representing marketing took a strong stance. Although the marketing representative also took part in the exchange of humor, she quickly returned to her argument in order to bring it to a strong conclusion.

Shared leadership's influence process is dynamic and emerges as the need arises (Friedrich et al., 2009). The segment noted in Table 4.31 highlights this process.

Table 4.31
Tactical Team: Collective Disagreement Segment 6/17/2009

Team member	**Quote**
Marketing	"So you know, I was trying to push back to say: Let's make sure that we don't do this in haste, that it really makes sense. And I thought, which you know I brought up, how can we differentiate the fixed account in the new product versus the other product. That's really what we're talking about—I mean, yeah, there's some other things we're changing."

In this instance, her argument and heightened emotion influenced the team to take notice of the issue and chart a different course to resolve it. The resolution was supported by the collective rather than any individual with authority. In the end, a decision was made to keep the marketing name for this product.

Interviews. Two themes emerged in interviews with the members of the Tactical Team: *product status* and *creative exploration*. Each is discussed with illustrative excerpts from the interviews.

Product status. The interviews made it clear that reporting project status was the main activity that occurred in the Tactical Team meetings. The participants described their interaction as mostly concentrated on reporting the status of each project, as shown in the following excerpt.

> Originally the meetings were very focused on process, the product development process, refining that process, making sure we had the process right. . . . It is now about more of a status meeting. Even though it is called "tactical," it is really a status meeting so the information that is brought that influences things is now being presented by the project managers is really status information: Here is where we are at, trying to get to colors. (Technology team member, personal communication, September 17, 2010)

The "colors" this participant referred to were codes utilized in the project management process that signified whether development was on course (green), was

facing challenges (yellow), or was in trouble (red). It was always the goal of the team to remain on course (green).

Another participant described the team's interaction that was focused on product status:

> The flavor mostly has been project status updates. . . . Occasionally there's support information that helps to give details . . . to help set up the story. (Systems assurance team member, personal communication, October 22, 2010)

Creative exploration. Creative exploration was another theme for this group, as the interaction of the members led to creative problem solving. One participant described it as follows:

> There's creativity in that room that allows that influence, . . . and I've seen that with either [name] with some of her creativity of getting a product out. . . . They had a creativity to it and said "Hey, let's try this." They rolled it out, and it was effective. I think that is a nice piece of that room; it does have a good influence on people. (Systems assurance team member, personal communication, October 22, 2010)

This team member described creativity as a team dynamic that was presented as a way to experiment with the unknown. He suggested that this element of creativity (and potential risk taking) had a positive influence on the team.

> But because there was a creativity to it, that said, there may be a big benefit. It didn't get shot down right away. And I think because there was an enthusiasm and a logical flavor to it, it's that creativity that came up. Because I've seen other creative ideas outside of that room get shot down—just because that's not the way we do it. (Systems assurance team member, personal communication, October 22, 2010)

As part of exploring solutions, this team member described how the new idea was presented—there was "an enthusiasm and a logical flavor to it"—which suggested the presenter's communication of the idea was just as appealing as the idea itself.

Summary of Findings for Research Question 1

The aim of the Tactical Team was to support the implementation of new product ideas. The team members' roles and responsibilities stretched across the organization, representing a variety of functional areas that were interdependent. Their levels of authority based on their job titles and areas of responsibility were equal in power and importance. Team success depended upon collective participation in planning, sharing knowledge, monitoring events, and reporting on status for the building and launch of new products. Therefore, the Tactical Team was the one team expected to drive approved products through the various stages of development until they were ready to be sold.

The research question sought to understand how shared leadership and expertise occurred in the Tactical Team. Expertise theory describes expertise in terms of specialized knowledge within a particular domain that is not easily transferable. Shared leadership theory presents leadership as a collective, social process that serves to laterally influence team members. Clear themes supporting both theories surfaced from the data collected during meeting observations and interviews.

The meeting observations pointed to circumstances where expertise was displayed during discussions about product specifications or the status of the project. For example, delivery of product specifications required specialized knowledge to convert abstract product ideas into viable systems architecture. This finding concerned what type of insurance coverage was constructed and how the inner workings of the new product were supported by programming and administration. Expertise also occurred in this team through product status, as meetings required accurate reporting based on knowledge about the status of development and any technical issues and solutions that arose.

The tendency to follow a meeting protocol was a theme that influenced team members' involvement in the discussion, as it provided the necessary structure to facilitate shared leadership. By following formal protocol, lateral influence and coordination of the team's interdependent tasks were facilitated so they were more easily achieved. Evidence of collective agreement was shown in the repetition of team members' dialogue or the filling in of each other's words. Collective disagreement was accompanied by strong use of body language, tone, or gestures to get the point across.

As the Tactical Team focused on building and launching new products, the team members relied upon each other as sources of expertise. Through interviews it was learned that complexity was at the core of their product development process. Insurance concepts were often complicated, and the team recognized that they needed to heavily rely on specific sources of expertise and that the expertise had to be credible. Credible expertise was not inferred simply by one's role in the company. The information from the source had to be proven and reliable over time for a team member to be considered an expert.

Interviews revealed that interaction about product status and creativity were viewed as the main themes for team dynamics. The purpose of the team was to discuss the status of the product in all its development stages. Creativity was a team dynamic when members needed to respond to issues that arose at various stages.

Table 4.32 summarizes findings on the occurrence of expertise and shared leadership in the Tactical Team.

Table 4.32
Tactical Team: Themes for Research Question 1

Research method	Expertise	Shared leadership
Meeting observations	Examples of expertise were delivery of product specifications and project status.	Examples of peer influence were following meeting protocol, collective agreement, and collective disagreement.
Interviews	Examples of expertise were product complexity, credibility of expertise, and project status.	Creativity surfaced as one of the concerns of the team.

Research Question 2: Tactical Team

In examining how expertise related to shared leadership in the Tactical Team's interactions, three themes emerged: (1) topic complexity and team response, (2) knowledge limitation leading to prolonged discussion, and (3) expertise versus trust. Each theme is discussed below and is illustrated with representative excerpts of dialogue taken from Tactical Team meeting observations as well as from interviews held with team members.

Topic Complexity and Team Response

To make team decisions, discussion about complex concepts required a specialized domain of knowledge. For instance, several of the team members who lacked programming expertise had difficulty appreciating what went into the development of a new product. Team members made assumptions at times and oversimplified a technical issue. The technology expert cited that when a team member assumed that what was needed was just a "rate table change," it signified the gross simplification of highly involved technical work that was required yet not understood:

> And there is an interpretation process because of various levels of expertise in the room. As an example: . . . "Well, it is on a table; change it." It usually is not that simple, and he knows that now. But it drove him crazy for a long time until I was

> able to demonstrate to him some of the complexity of how this works. (Technology team member, personal communication, September 17, 2010)

Eventually, the team members began to appreciate that programming was more complex than what appeared at first glance. As their understanding about this issue improved, they would occasionally catch themselves by poking fun at themselves and their tendency as a team to underestimate programming efforts. Reference to rate table changes became a routine joke and a symbol of the team's tendency to oversimplify complex matters, as noted in Table 4.33.

Table 4.33
Tactical Team: Complexity-Oversimplification Segment 7/22/2009

Team member	**Quote**
Project manager	I just know that was part of the plan, and I know S wasn't able to get to it because of the account rec [reconciliation] project.
Product business analyst	It's just a rate table change. [loud laughter from all]

Another way the team responded to complexity was by deferring to the perceived expert. One team member described the experience in this way:

> No one is going to question the marketing team on their ability to market a product and their decision making on communications, so we tend to defer. And if it's coming from that area it's—yes, that's a good—a good piece and the same from a technical, same from actuarial. But it's evident that you can tell what topics are being driven by the person. It does get a deferral to their expertise. (Systems assurance team member, personal communication, October 22, 2010)

This segment explains that expertise and shared leadership relate to each other by how the team responds to specialization outside of some of the team members' expertise. If the topic of discussion or creative write-up was outside the expertise of the majority of the team members, it was perceived that they typically accepted the facts or the proposal from that specialized source by deferring to him or her. The team member elaborated:

> Many times they may be the only person in the room that knows anything about the topic—so I would say probably more on the actuarial side. They have a real close knowledge, and it's a special world in this, and they may know so closely what they're talking about that it loses people, and then we kind of just defer: "Boy, that's [name] and [name] and [name] are all talking, and [name] are all talking something so specific to an actuarial component of a product, we're like, well, okay—who am I to argue?" I couldn't even, so I'll go along with it assuming they're right. (Systems assurance team member, personal communication, October 22, 2010)

The suggestion is that the team member who is not specialized enough to understand the discussion doesn't know enough to even challenge any parts of the discussion. In these scenarios, some of the team members deferred to the experts.

Knowledge Limitation Related to Prolonged Discussions

When there was insufficient knowledge about a particular topic, the discussion grew with the raising of questions. Questions triggered knowledgeable responses. But in cases where the knowledge was absent, assumptions and guesswork filled informational gaps. The discussion was prolonged as comments circled repetitiously without reaching any concrete conclusion. This type of discussion left every team member without sufficient facts to make a decision or take action. One example of a discussion that lacked sufficient detail covered 5 pages of transcript. Table 4.34 reproduces a short segment from that discussion.

Table 4.34
Tactical Team: Knowledge Limitation Segment 6/17/2009

Team member	**Quote**
Actuary	"Was there something about if you requalify, you only have choice of same class or worse?"
Product	"That's the underwriting piece."
Actuary	"Was it the same or worse?"
Product	"I didn't really get it. So I thought what we may want to do is talk to [the agent] about it."
Actuary	"We might have different classes now too; don't know how old the product was."
Product	"Need to arrange a conference call with [the agent] to see what his issues are and to see how they are doing requalifications; see how they go about it and understand what he is going through. I guess I'll set that up."
Actuary	"I am just curious about it from a reinstatement perspective. One of these obscure . . . how do ya' . . . may look like a new policy, may look like an old policy, kind of something in the middle of that."
Product	"I don't really understand the process."
Marketing	"I think I would like to understand, not sure would or should." [laughter]

In this example, no single individual had enough expertise to explain the program to the others, so there was no influence that related to the source of expertise. Since expertise was missing from the room during this interaction, the team persisted in asking questions while the answers continued to elude them, which led to even more questions. The lack of knowledge prolonged the interaction until one of the members recognized they had reached an impasse. This team member then offered to arrange a separate meeting with the perceived expert to collect more information.

Expertise Versus Trust

The following discussion presents how expertise was related to greater credibility and trust, as described in team interviews.

The interview participants made a strong connection with the functional roles of the team members. They first chose to accept information from the person who was the purported expert. For instance:

> If [there is] a marketing type of question of what we should or should not communicate, our marketing expert is far more influential in her opinion than [name] would be because he is not as close to that. (Technology team member, personal communication, September 7, 2010)

While they initially expected each other's role to represent expertise, they said there had to be evidence of it over time. As the team worked together and saw evidence of expertise, they became confident they were working with a true expert. Trust developed over time based on actual results. The following statement provides this insightful distinction:

> Then beyond that, the proof is in the pudding and after you have worked with someone enough to believe in that expertise. So it is multiple layers, and as you see projects that are executed, you see evidence of that, then you become more confident that they are the expert. (Business analyst, personal communication, September 23, 2010)

If, on the other hand, there was a poor experience with the expert in the past, that experience caused the expertise to be discredited and the team questioned further before accepting advice. The participant expressed his observation in this way:

> I have to question and just almost trying to prove the answer, you know. You've got to prove to me that this is a really good decision because in the past you haven't demonstrated consistently. (Systems assurance team member, personal communication, October 22, 2010)

Summary of Findings for Research Question 2

Overall, the Tactical Team's interaction dealt with topics that related to their new products' construction and timely launch. Whenever the team discovered problems that could impact their delivery to the marketplace, the team members strove to solve them. As a result of not fully appreciating the complex underpinnings of an issue, the team at times oversimplified assumptions about the problem. The discussions in the Tactical

Team revealed a distinct relationship between subject matter complexity and the tendency to oversimplify what was not understood. These two phenomena related to the theories of distributed expertise and shared leadership in the following way: distributed expertise informed what was initially viewed as complex even when it meant deferring to the individual with the appropriate domain of knowledge. Shared leadership, as the means by which the team was influenced socially, could be seen in the team's assuming of the responsibility to understand the topic even at the risk of oversimplifying the subject matter.

When there was not sufficient knowledge, shared leadership also resulted in prolonged discussions. While the team recognized they did not have sufficient expertise to understand the topic at hand, they continued to discuss it at length in an attempt to increase their understanding. Questions led to guesswork and further questions.

Interviews revealed that the team's perception of expertise as a form of technical domain knowledge based on the role of the team member only went so far. It was the experience one had with that team member that led to trusting the individual representing the role as a credible source of expertise.

Table 4.35 presents the findings for the second research question in the context of the Tactical Team.

Table 4.35
Tactical Team: Themes for Research Question 2

Research method	**Expertise**	**Shared leadership**
Meeting observations	Topic complexity led to deference of expertise. In some areas, team members had limited knowledge.	Topic complexity was addressed through humorous comments and oversimplifications of the issue. Prolonged discussion resulted when members lacked the necessary knowledge; social influence encouraged continued interrogation of the issue without reaching conclusions.
Interviews	Evidence confirmed expertise in role.	Trust in the source of knowledge was based on experience working with the expert.

Based on the themes that emerged for distributed expertise and shared leadership in the two teams, chapter 5 discusses the findings and the main conclusions of the study.

CHAPTER 5:

DISCUSSION, CONCLUSIONS, AND IMPLICATIONS OF MAJOR FINDINGS

Experto credo. [Trust an expert.] —Virgil

Knowledge is power. —Francis Bacon

The goal of this study was to understand how distributed expertise and shared leadership occurred in new product development teams and how they related to each other in team interactions. This research began with the assumption that there is a relationship between leadership and expertise grounded in social interaction. Therefore, the study was based on a conceptual framework derived from shared leadership theory and studies on expertise (Bligh et al., 2006; Cox et al., 2003; Ericsson, 1996, 2006; Fletcher & Kaufer, 2003). The conceptual framework proposed that the presence of shared leadership and expertise in new product development teams would lead to interplay between and among team members who were task interdependent and whose shared purpose united them in their commitment to achieve quality end products. What was not known at the time of the study was how leadership and expertise occurred in new product development teams and how they related to each other during team interactions.

The literature defined expertise as specialized knowledge that resides within a specific domain and that is not easily transferable (Boster & Johnson, 1989; Chi et al., 1988; Ericsson & Smith, 1991; Ericsson, Charness, & Feltovich, 2006). However, studies on expertise focused on individuals and were often conducted in laboratory settings. Studies based on transactive memory systems (TMS) provided insight about expertise in teams (Lewis, 2003, 2004; Liang et al., 1995) but failed to reveal how expertise occurred in teams within an office environment. In addition, there were no recent examples of

studies based on the insurance industry where expert domains including actuarial science and technology were represented in process work such as new product development.

Shared leadership is defined as a "a dynamic, interactive influence process among individuals in groups for which the objective is to lead one another to the achievement of group or organizational goals or both" (Pearce & Conger, 2003, p. 1; Pearce et al., 2010, p. 151). The shared leadership concept, drawn primarily from practitioner literature, has been described as a social process of influence engaged in by team members who are both agents and targets of influence (Cox et al., 2003). The literature further described shared leadership as being effective in dealing with knowledge and performance demands in new product development teams, but it did not reveal how shared leadership was applied in that setting (Cox et al., 2003; Parker, 1994; Sashkin & Sashkin, 1994). More recently, Friedrich et al. (2009) observed that little research on shared leadership has taken an "informational or expertise focus," and there has been insufficient work on the "dynamic nature" required of a team when it is based on information and expertise (p. 955). This study set out to answer some of the questions raised by Friedrich et al. (2009).

The vast majority of the shared leadership literature is theoretical. The existing empirical studies primarily address contexts in which team members are temporarily assigned to roles and frequently substituted by others (Bechky, 2006; Klein et al., 2006; Bigley & Roberts, 2001) or quantitative measurements that predict outcomes of shared leadership (Avolio, Jung, Murry, & Sivasubramaniam, 1996; Manz, Manz, Adams, & Shipper, 2010; Bergman et al., 2012; Bowers & Seashore, 1966; Pearce & Manz, 2011; Pearce & Sims, 2002; Pearce, Yoo, & Alavi, 2004). Due to these limitations in research and theory, a comparative case study about two collectives operating in a natural

workplace setting served to provide relevant information about expertise and shared leadership in a business context.

The two research questions guided this qualitative study as to what areas to observe that related to shared leadership and expertise:

1. How does distributed expertise and shared leadership occur in new product development teams?
2. How does distributed expertise relate to shared leadership in interactions within new product development teams?

This chapter discusses the major findings of the study in response to these questions and presents conclusions and implications of those findings as they relate to shared leadership and distributed expertise. The chapter is organized into four sections. The first section discusses the main findings of the study as they relate to the conceptual framework and research questions. The second section outlines the conclusions, followed by a section on the study's limitations. The chapter closes with implications for research, theory, and practice.

Discussion of Findings

This section interprets the findings and relates them back to theories about shared leadership and expertise. There were eight patterns that related to expertise and shared leadership in each of the two product development teams: (1) mission by team; (2) temporal framework by team; (3) technical complexity by team; (4) collective agreement, collective disagreement, and task coordination; (5) risk exposure by team; (6) role-based expertise; (7) cognitive-based trust; and (8) the relationship between shared leadership and distributed expertise. All the findings were based on individual interviews, group

meeting observations, and documentation such as published agendas and minutes of the meetings. Some of the findings contained a degree of variability based on the team, observed largely due to the context of the team's mission. Therefore, the basis for the findings was the team itself, manifested by the team's purpose and its role in the new product development function.

Mission by Team

The nature of the team interactions was mission specific. The mission of each team provided the structure for the type of interaction that occurred. For the Concept and Feasibility Team, findings that related to the first research question about distributed expertise were evidenced in two key scenarios. This team focused on exploration of new competitive intelligence and product design, which required the team members to exhibit specific content knowledge about product features, pricing, mortality, and hedging in order to be part of the discussion. March's (1991) theory of exploration sheds light on the team's encounter with phenomena such as "search, variation, risk taking, experimentation" (p. 71). These phenomena correlated with the purpose of the Concept and Feasibility Team, which was to research, discover, and leverage new opportunities for the company's product portfolio.

As part of its mission to conceptualize and propose new products, the Concept and Feasibility Team regularly dealt with abstract ideas backed up by facts, logical argument, and supporting documentation. Team interaction that related to assessing the industry environment was based on competitive data and actuarial forecasts. Gathering competitive intelligence was a routine activity for this team, and the team members' knowledge became apparent as the various companies' product portfolios and

profitability experiences were discussed and evaluated in the meetings. The interactions of the Concept and Feasibility Team were characterized by expansiveness and openness in discussing possible scenarios for the future. The content of the meeting reflected the nature of their expertise, which was based on hard facts and reasoning. The expertise displayed in this team reflected "effortful mental activities including complex computations"—characterized as System 2 thinking by Kahneman's (2011, p. 21) dual process theory that proposes that thoughts are either driven by facts and logic or by intuition.

The mission of the team was to craft products containing features that were attractively priced to support consumers' investment strategies. Therefore, the mission influenced the team members to convert their specialized knowledge into language that translated specific ideas into viable proposals. As a characteristic of this team's interaction, special domain knowledge continually surfaced throughout the conversation. The team's expertise was apparent in a variety of ways. This display of expertise occurred when actuaries described the inner workings of the product, when technology experts depicted the required programming work, and when marketing specialists planned a communication strategy incorporating key sales concepts. Throughout the technical discussion, basic topics that characterized teamwork and cooperation coexisted with the more specialized dialogue that related to expertise. Conversation moved from a more sophisticated language to less formal dialogue that included questioning, responding, agreement, and disagreement (Cox et al., 2003; Fletcher & Kaufer, 2003).

In contrast to the Concept and Feasibility Team, the Tactical Team was responsible for the operational development and implementation of a new product. This

team had responsibility for delivering the entirety of new product specifications designed by the Concept and Feasibility Team. Engineering its design into an array of underlying programming code within the mainframe system specifically involved the technology expert and his programming team due to their specialized domain of knowledge. As a result of this team's mission, the team's focus contained the characteristics of March's (1991) "exploitation of old certainties," such as production efficiency, implementation, and execution (p. 71).

Related to the actual building of the product was the status reporting portion of the meetings. Reporting the status of milestones was commonplace in the Tactical Team's meetings, as the team measured progress that was occurring outside of the meetings. The reporting was a critical way to ensure that all development steps supporting the product specifications were on task and that key deliverables were expected to be on schedule. Both successes and problems encountered were part of the weekly status updates.

The members of the Tactical Team were task oriented and, as a result, expected precise and timely information about the delivery of the product specifications. The Tactical Team's demonstrated ability to think quickly and react with agility was based on general knowledge and intuition rather than the logical, conceptual thinking of the Concept and Feasibility Team (Kahneman, 2011). The information typically related to status and delivery issues that could be acknowledged and influenced by most members who were adept at problem solving. The information exchanged was more readily available and certain for the Tactical Team. At times when the issues related to more complex coding and programming, the technology expert took charge because of his

specialized know-how (Garud, 1997). Special domain knowledge that facilitated technical solutions was used to respond to emergencies. The project manager also played a significant role to ensure the new product development effort made progress throughout all stages. Expertise ranged from procedural to content knowledge (Eraut, 1994), and the team responded to issues with diagnostic questions while the main source of information came from technology and project management.

The aim of the Tactical Team was to deliver a high-quality product within the most optimal timeframe. As a result, both expertise and shared leadership were important elements to support the launch of new insurance products. Shared leadership occurred when general information was updated during the course of reviewing a new product in the process of development. In one scenario, a project update was in the process of being presented and as the dialogue unfolded, it became clear that a key person responsible for carrying out a critical step was going to be out for an extensive period. The team posed questions until there was a clear realization that the date for filing the product was in jeopardy, possibly impacting the overall launch date. Knowledgeable updates such as these were important for the Tactical Team to be aware of upcoming issues.

Temporal Framework by Team

The two teams functioned differently in relation to time. As part of its mission, the Concept and Feasibility Team held a strategic perspective. While the team made progress on gathering research and making decisions, they did not need to operate with a high level of speed. They were planning for the future, so the team suspended any immediate temporal constraints, which allowed them to think about ideas objectively and take the necessary time to follow up when additional information was required. The team

met biweekly, which allowed enough time to conduct the required research and analysis between each meeting.

As economic dynamics continued to shift, some decisions about quantitative factors such as interest rates were left open-ended until more time provided a clearer picture of which option would be appropriate. Due to this team's charge to propose new products that were intended for profitable sales, their analysis included a retrospective view of how current products in the portfolio were performing compared to forecasts. Looking to the past to determine the future was often the essence of new product development work. The information provided by each team member was momentary and specific to the domain of knowledge needed at the time. Therefore, it was the distribution of expertise that provided a fluidity of knowledge as it was needed. Since the expected results from this team's plans projected into the future, their work did not have an immediate impact on the current situation. In fact, the team's thought process was often guarded and uncertain because what may have been appropriate for the present was not necessarily appropriate for the future (March, 1991). To compensate for that uncertainty, this team had to consider what the economic and consumer environment "might demand" in order to create appropriately for the future.

Shared leadership, as a form of collective influence, was observed whenever the Concept and Feasibility Team engaged in the process of creative exploration. This form of discussion contained a free flow of ideas and a sharing of discussion points that included questions and opinions. The back-and-forth questioning and responding among the team members was a general pattern that exemplified the peer status of the team members and the knowledge they had in common about life insurance products. By

definition, shared leadership as peer influence could be advanced by any member regardless of expertise**.** Due to the fact that the team had a high task and knowledge interdependency, the members collaborated in order to create new products. Their meetings were characterized by "brainstorming" and "pitching" new product ideas to one another. Team members' interaction built upon others' ideas and even modified them until the entire team felt ownership of the end product.

The Tactical Team dealt with specific plans for their product launch, and their "brainstorming" activity came into play whenever there was a tactical issue to solve. Generally, their discussion style was more pragmatic, and they were agenda driven based on the need to provide a status update of the product development process. Since the Tactical Team's charge was to monitor all activity as part of the construction and launch of the new product, the team focused on operational implications of the development process. The team had to ensure that the product work went as planned, and when issues arose, team members responded quickly with solutions as well as contingency plans.

Dealing with actual events as opposed to abstractions increased the immediacy of their actions in meetings. Compared with the Concept and Feasibility Team, this team had a shorter timeline within which to operate. The Tactical Team exploited the environment for resources and development time to ensure the success of the project, as it dealt with well-defined deliverables that were to be executed within a short period of time. There were more immediate consequences related to the Tactical Team's tasks because the nature of their work led to higher "certainty, speed, proximity and clarity" (March, 1991, p. 73). As a result, their meetings were scheduled weekly. Their focus on

"real-time" updates contrasted with that of the Concept and Feasibility Team, where information sharing dealt with longer-term decision making.

Technical Complexity by Team

Characteristically, the Concept and Feasibility Team's discussion reached levels of high technical complexity. The individuals worked together on a series of products and were accustomed to complex discussions as part of the agenda. However, when actuarial assumptions were regularly introduced into discussions, some of the team members had difficulty following the conversation. It was generally accepted that special expertise was required to be able to converse and understand the underpinnings of products from the actuarial perspective. Therefore, the team responded in one of two ways. The first way related to recognizing who the expert was in the conversation and deferring to him or her for direction. The second way was a more socially oriented reaction that demonstrated humor either by self-deprecation ("my head is hurting") or by poking fun at the team member who introduced the technical complexity into the conversation.

The distribution of expertise began when the expert with the relevant knowledge imparted specialized knowledge to the rest of the team. In this research, evidence of distributed expertise was noted when questions were posed about competitive intelligence and product design. The expertise was provided as part of the team's research just when it was needed to formulate future design. As an individual member "stepped up" to describe in detail competitors' products, the team relied upon this specific knowledge to inform their decision making. For the Concept and Feasibility Team, competitive intelligence was proprietary knowledge and only available within specific confines such as state filings and peer industry groups where membership was exclusive. The contribution

made by the expert to share exclusive knowledge with the rest of the team demonstrated a level of confidence and courage. According to Stasser and Titus (1985), specialized knowledge is less likely to be shared in group discussion than commonly held knowledge. In addition, Thomas-Hunt et al. (2003) noted that information sharing depends on the team member's acceptance by the group and the type of expertise held by the individual.

The expertise continued to distribute when team members who lacked the necessary expertise deferred to the expert. The mission of the Concept and Feasibility Team was to focus on facts and details that were specialized and known by specific subject matter experts. As a result, team members willingly deferred to the appropriate expert who had the relevant knowledge. Questions operated as one of the triggers for the appropriate expert to display his or her specialized knowledge to the rest of the team. Another trigger was when the team discussion contained speculation or incorrect assumptions; in such a case, the informed team member corrected those notions with the proper information at the appropriate time. What completed the distribution of expertise was the way the rest of the team members responded to the knowledge imparted. When team members relied on expert knowledge that they did not personally hold, the resulting reaction was deference to the expert.

Deference to expertise is not a new organizational theory. Weick and Sutcliffe (2001) acknowledged the role of deference to expertise in high-reliability organizations. To further support this observation, Yukl (2006) explained, "Expertise is a source of power only if others are dependent" on that source for information or advice (p. 155). More recently, shared leadership theory has incorporated the idea of "stepping back and

allowing others to lead when the situation requires their background and expertise" (Manz et al., 2010, p. 213). In addition, a "coordination of expertise" has been described to occur when there are task-based knowledge dependencies (Faraj & Sproull, 2000, p. 1556). These researchers declared that expertise must not only be "distributed" but also "heeded" for it to be effective (Faraj & Sproull, 2000, p. 1556).

In the Concept and Feasibility Team, interplay between team members demonstrated that, at times, they assumed the role of agents of their own expertise while at other times they responded as targets of others' expertise. Due to their interdependency, the team members operated in a symbiotic manner. They were willing to relinquish opportunity to present their own ideas or opinions in order to receive valuable input on behalf of their more expert peers. Figure 5.1 illustrates how expertise is distributed in team interaction.

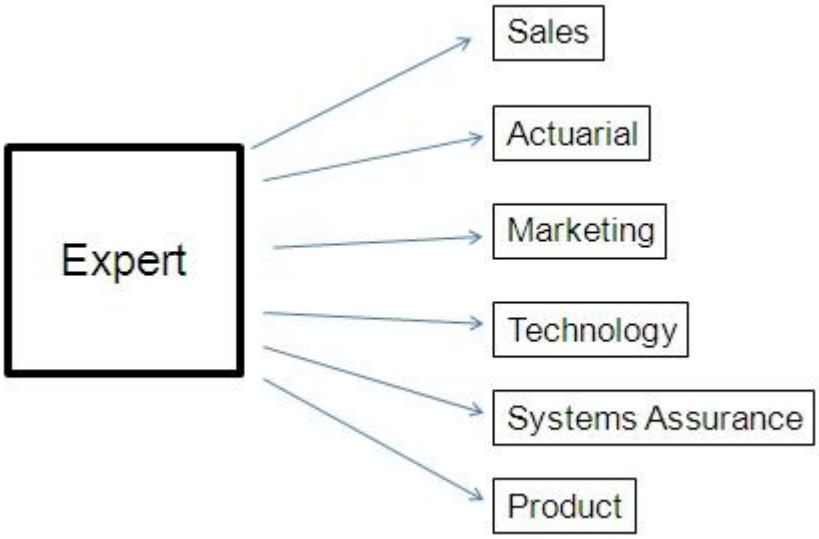

Figure 5.1. Team interaction as distributed expertise.

Within the framework of expertise, actuaries frequently maintained the most highly expert portion of the discussion, as they were in the position to prove the profitability of the proposed product. Because the actuaries were the best qualified to achieve this objective, the rest of the team often looked to them for their expertise for final decisions. However, there were times when even the actuaries needed to rely on experts outside their realm of knowledge. In order to know how the product specifications would be programmed for the end product, the actuaries depended on the technology expert for assurance. Yukl (2006) pointed out that the "most convincing way to demonstrate expertise is by solving important problems, making good decisions, providing sound advice, and successfully completing challenging but highly visible projects" (p. 155). Therefore, in this study, distribution of expertise occurred when relevant information facilitated decisions and actions by the team.

The Tactical Team's encounter with complexity had some areas in common with the Concept and Feasibility Team. For example, both teams sometimes oversimplified a solution or made assumptions. As an example, in the Tactical Team, the technology member expressed frustration when his peers' lack of understanding oversimplified the skill and effort required for programming. Making assumptions characterized System 1 thinking, as it was reactionary and relied on bias and speculation rather than the facts (Kahneman, 2011; Stanovich & West, 2000). In addition to these responses to complexity, at times, the Tactical Team did not have sufficient knowledge to recognize when they lacked expertise.

Another manifestation of insufficient expertise was displayed when dialogue failed to capture the needed knowledge. In these scenarios, the result was prolonged

discussion with repetitive questions when there was an absence of facts. These two examples demonstrated the tendency of the team to conduct business without fully understanding the issues. This team's reaction contrasted with that of the Concept and Feasibility Team, where there was a greater appreciation for the intricacy of the knowledge required and thus recognition of any knowledge gaps. The Tactical Team meetings were not as complex technically as the Concept and Feasibility Team meetings. However, given the importance of product execution within new product development strategy, the Tactical Team's ability to rely on specific members for relevant expertise was necessary for a successful product roll out.

The two teams comprised members who worked over multiple product development strategies and product launches. As a result of their long-term relationship as team members, displays of humor were common in their discussions. Humor was often present whenever the discussion topic became complicated. Humor was a device used to signal when the level of complexity was impacting some of the team members' understanding of the discussion. According to Hatch (1997), the introduction of humor is a common way of coping with complex topics. Hatch's study pointed to the role paradox plays in humor. For the Concept and Feasibility Team, the paradox of their humor was in the recognition that while they all considered themselves experts, they did not each hold sufficient expertise to understand all concepts. The Tactical Team used humor frequently by poking fun at the members' own shortcomings. When team members learned there were greater implications to programming changes than what they initially expected, it became a running joke as they referred to "just a table change." Both teams also used humor as a method to defuse conflict during team interaction.

When team members had awareness that they lacked expertise, their acknowledgment led to a productive team response compared to when they lacked this realization. Table 5.1 displays the ways the teams reacted when members did not hold the relevant expertise to solve a particular problem. The response is categorized by whether or not the team had an awareness of their knowledge gap.

Table 5.1
Team Reaction When Expertise Is Insufficient

Team	**Recognition of expertise gap**	**No recognition of expertise gap**
Concept and Feasibility	• React with humor to shortcoming • Defer to expert	• Oversimplification • Incorrect assumptions
Tactical	• React with humor to shortcoming • Defer to expert	• Oversimplification • Incorrect assumptions • Prolonged discussion reaching no conclusion

Collective Agreement, Collective Disagreement, and Task Coordination

As discussed previously, deference to expertise was exercised when topics proved to be too complex for the entire team to provide knowledgeable input. However, when the team held sufficient knowledge about a topic to discuss and influence the outcome, agreement was one typical outcome. Each individual weighed facts and opinions until the team as a whole agreed on a course of action. Often the teams responded to questioning with one voice—each person echoing another as a form of repetition. It was typical for team members to finish each other's sentences as evidence of agreement. Whenever there was agreement, it formed a team commitment to follow through on a decision or course of action. Team members in each team made it explicitly known to each other when there was agreement. Figure 5.2 illustrates the nature of shared leadership as team members' comments built upon the comments of their peers.

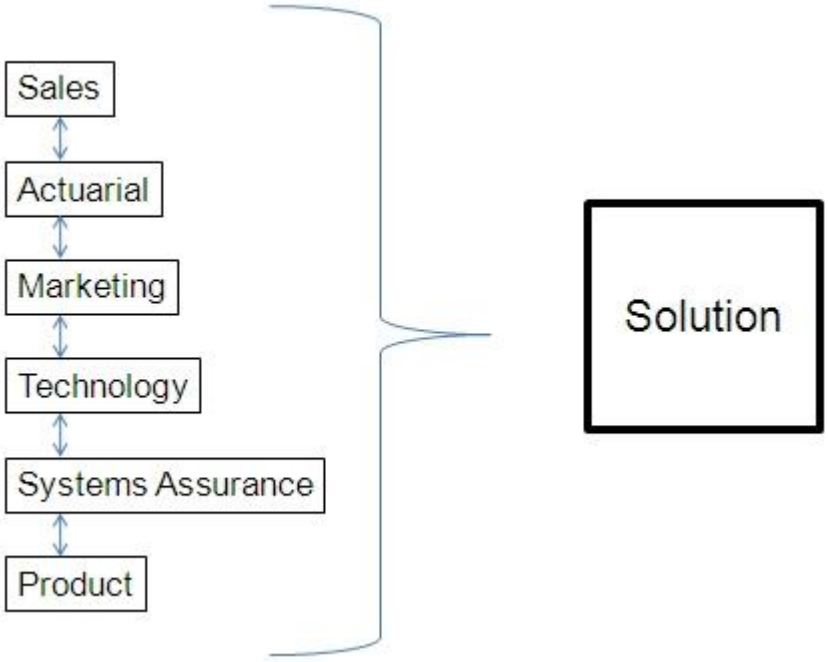

Figure 5.2. Team interaction as shared leadership.

When the team had sufficient knowledge to discuss an idea fully but maintained differing perspectives, sometimes disagreement was the result. Disagreement often arose as an opinion that lacked support for an idea. The team dynamics changed when disagreement introduced a different tone such as an emotional emphasis in the verbal delivery or body language. At times, when disagreement was received without challenge, members dropped their advocacy and quietly withdrew from the discussion. Occasionally, humor was introduced into the discussion to defuse tension, or a reminder was called out to be civil and "not attack." These team experiences were observed equally in both the Concept and Feasibility Team and the Tactical Team. As such, these tactics portrayed different ways the teams were engaged in an interactive influence process in order to lead each other toward their goals (Pearce & Conger, 2003; Pearce et al., 2009, 2010).

Another observation that reflected peer influence related to the team members' coordination of tasks. Faraj and Sproull (2000) described the concept of coordination as "team-situated interactions" that concern administration and the management of resources, such as contributing towards agenda items or offering to handle a task. While members of both teams participated in the mutual adjustment of their actions to the actions of others (Thompson, 1967), the low complexity of tasks within the Tactical Team's meetings led to more instances of task coordination than in the Concept and Feasibility Team.

Risk Exposure by Team

The economic dynamics of the industry were broadly considered as the Concept and Feasibility Team determined their company's risk exposure. As part of product design, any new concept was considered from a feasibility perspective. The team's discussion often resulted in concerns about economic feasibility, where team members questioned how a particular product would perform for their company. Because the Concept and Feasibility Team dealt with long-term planning, it decided on specifications that had to be feasible long term. Team members interrogated each other in a lively manner to learn more about the products' possibilities. Questions punctuated with "what about" and "what if" were common as various experts alternated in providing informed opinions and knowledge in the areas in which they specialized. Whenever an idea had sales potential, the team considered the size of the development process and if the evaluation of its effort and cost was worth the initial investment.

As part of its mission to conceptualize and propose new products, the Concept and Feasibility Team regularly dealt with abstract ideas backed up by facts, logical

arguments, and supporting documentation (Kahneman, 2011). Therefore, the risk for the team was that any plans that were suitable today could be unacceptable tomorrow. For instance, the team grappled with the concern that the interest rate environment could quickly change and jeopardize the projected performance of a new product or the product might not achieve sales projections, which would also impact the profitability of the product line. The challenge for the Concept and Feasibility Team was not to cut short creative thinking with concerns about the economic feasibility of their ideas. Operating as a long-term team produced an awareness of past product launches that influenced judgment and caution about risks they could face.

For the Tactical Team, the mechanics of new product design were often complicated by the underlying systems' infrastructure and programming language. Discussions often approached the topic of time and expense as additional risks connected with introducing a new product when the projected sales might not warrant the investment. The team was charged with making appropriate decisions that would mitigate any unnecessary risks associated with the building and launching of new products. Risk was further manifested whenever a delay in the schedule led to descoping any planned deliverables that ultimately exposed the product to new risks. The paradox in this scenario was that while delays in development caused risks, the team's reaction to delays could cause other risks.

Typically, there were planned risks and unplanned risks in the product development process. When the product appeared to be encountering delays, the discussion expanded into speculation about the cause of the delay, and considerations were given to solving the problem. When goals were missed or activities leading up to

those goals were hampered, the Tactical Team reacted to developing issues with a heightened sense of urgency. The Tactical Team's responsibility for product launch required an immediacy to understand and solve the issue so the process would get quickly back on schedule. Therefore, the Tactical Team's expertise related to actual high-risk circumstances that impacted the introduction of a new product into the marketplace. Since any quality issues concerning the programming and implementation of the new product had immediate implications, the tasks supported by the Tactical Team contained greater risk than those of the Concept and Feasibility Team.

Role-Based Expertise

In the context of the Concept and Feasibility Team, the team members expected knowledge to be embedded in the roles people performed in the organization. However, roles were considered to be just the starting point to ensure proper technical representation on the team. For both the Concept and Feasibility Team and the Tactical Team, expertise based on one's job title and its corresponding role was viewed as simply a preliminary step towards discovering true expertise for each key technical team member. Ultimately, it was the evidence of one's expertise that held more significance than one's positional title and authority. It was expressed during individual team members' interviews that "true" expertise related to the trust level one had with the team member as a source of knowledge.

While an individual's professional role and status qualified him or her to represent a technical function in the team—"someone thought they were an expert"—this expertise was not always credible. The "proof was in the pudding," and the team expected to see participation and involvement as well as reliable information set forth by their team

members. Concrete evidence was highly respected by the team when there was advance preparation with supporting documentation. Further, it was expected that additional research including reliable sources of information would be sought out when they were not immediately at hand. Whenever an expert needed to rely on resources outside the team, that source of information was expected to be just as credible as the team member's own knowledge, as it was viewed as an extension of the team member's expertise. Therefore, one's area of expertise was transmitted to others by carefully prepared presentations, including documented evidence of one's specialized knowledge based on facts.

The Concept and Feasibility Team was composed of an expert membership where the domains of knowledge were specialized and the topics discussed were complex. While the Tactical Team's membership contained some of the same specialized members, the topics were not always as complex in nature. Nevertheless, the team showed signs of deference towards individuals with expert knowledge when confronted with technology problems. Mary Parker Follett's (1924) seminal writings attribute special expertise as the basis for others to follow.

Cognitive-Based Trust

Closely aligned with credibility is trust. Kouzes and Posner (2011) noted that trust requires reciprocity so all sides can fully dialogue about an issue. Another way of experiencing credibility of expertise was through the development of "cognitive trust." Chowdhury (2005) described cognitive trust as based on role performance and professional credentials. In this new product development study, interviews bore out the distinction between one's role, which is where expertise was expected, and performance,

which is where expertise was experienced first hand. Participants stated that trust in a team member's expertise was earned from the culmination of one's experience with that expert, including the quality and dependability of the knowledge shared. Holton (2001) described trust as developing through "frequent and meaningful interaction" (p. 36). Maintaining trust within the team was an important factor in ensuring collaboration. Unless the source of information was considered trustworthy, information was not relied upon.

When developed over time, cognitive-based trust allows team members to work in an environment where there is mutual respect for each person's professional expertise and performance (Bligh et al., 2006; Holton, 2001). Experiencing evidence-based knowledge over a period of time resulted in the team's trust in various team members. According to Bligh et al. (2006), when an individual does not trust other team members to "uphold commitments," he is unlikely to accept their influence (p. 301). Cognitive-based trust allows the evaluating team member to more readily "engage in collaborative work and seek knowledge from those he or she trusts" (Chowdhury, 2005). Establishing trust is a fundamental requirement for a team to be successful (Senge, Kleiner, Roberts, Ross, & Smith, 1994). The Tactical Team's expectation of credible expertise was in line with the criteria the Concept and Feasibility Team had for trust in expertise. Trust was conveyed as a result of a team member's mastery of verbal presentation skills, inclusion of data that supported the argument, and follow through. Not meeting those standards could invalidate the team member's status as an expert.

Expertise-related dialogue was simultaneously "played out" with dialogue based on more broadly held knowledge. As a constant partner to the presence of expertise, the

team members' interaction contained examples of mutual adjustment (Thompson, 1967) and social influence (Pearce & Conger, 2003).

Relationship Between Shared Leadership and Distributed Expertise

The second research question dealt with understanding the relationship between shared leadership and expertise. This study's findings revealed five types of relationship between shared leadership and distributed expertise. These related to (1) reaching agreement, (2) idea generation and risk avoidance, (3) role and trust, (4) discussion of complex topics, and (5) transmittal of specialized knowledge. The section closes by illustrating the relationship between shared leadership and expertise for each team.

The first relationship noted between shared leadership and distributed expertise was presented in scenarios where the team achieved agreement. Collective agreement was an important part of interaction in the teams and was reached in one of two different ways. First, if the activity was basic, such as organizing agenda items and resolving simpler problems, team members demonstrated coordinated action as a form of shared leadership. When a topic proved to be complex and required specialized knowledge, the members relied on distributed expertise to defer to the most knowledgeable team member. TMS theory addresses the notion of differentiated group knowledge, as team members are responsible for unique knowledge, compared to shared knowledge, which is similar knowledge held in common (Lewis & Herndon, 2011). As discussed previously, deference required trust in the team member's source of knowledge, which was earned over time. Shared leadership and distributed expertise represented different ways of moving towards collective agreement for teams to conduct new product development tasks.

Idea generation and risk avoidance characterized the second relationship between shared leadership as peer influence and expertise. The purpose of the Concept and Feasibility Team was to freely think about and create new product opportunities. However, past experience taught this team to be cautious about ideas that might prove to be expensive and unfruitful. The team recognized that some creative ideas could introduce too much risk for the company, yet they recognized that hindering creativity would stop promising ideas before they could be fully evaluated. The team needed to find a balance in allowing the social process to generate ideas. However, they generally behaved in a conservative manner based on experience and their discrete disciplines, as they were accountable for not just their ideas but also for the manifestation of their ideas. In these scenarios, the actuarial knowledge about product profitability kept a tight tether on idea exploration. Therefore, expertise had more power in these scenarios than peer influence.

Role and trust was the third relationship between shared leadership and expertise. Teams were established by recruiting individuals in key roles to represent a diversity of functional areas within the company. Individuals who held these roles were respected as knowledgeable representatives unless an event disproved that notion. Shared leadership theory espouses that the diversity of team membership will facilitate knowledgeable exchanges (Cox et al., 2003). However, in this study each team expected evidence of expertise and withheld their trust of members who could not demonstrate it. Team members knew the strengths and weaknesses of their teammates, which facilitated the use of appropriate expertise (Liang et al., 1995). Therefore, the evidence of expertise had more weight in deciding who held expert status in the team than what the role itself

represented. Liang et al. (1995) supported this notion that in expert teams where tasks are shared, members know who has "what" expertise, which leads to their trust in the source of that specialized knowledge.

The fourth relationship between the processes of shared leadership and distributed expertise was apparent whenever the meeting topic entered a level of complexity. Team reaction varied when concepts that were specialized and unknowable by most team members were introduced into the discussion. One reaction noted in both teams was the introduction of humor and poking fun at the expert or even themselves in a self-deprecating manner. The context of expert team members lacking sufficient knowledge about a concept set off moments of levity when someone failed to grasp a discussion point. Hatch (1997) provided insight when humor is used by teams in ironic circumstances. While the team members were known for their expertise, it was a contradiction when cognitive shortcomings revealed themselves during conversations. Another response that was shared by both teams was when team members who lacked the proper expertise oversimplified the concepts, leading to incorrect assumptions. Sometimes when the Tactical Team members lacked sufficient knowledge about a process, it led to persistent questioning, resulting in prolonged discussions failing to satisfy the issue.

The fifth relationship between shared leadership and the distribution of expertise occurred based on how specialized knowledge was transmitted. Occasionally, a team member used a forceful approach to make a point that was specifically rooted in his or her domain of expertise. When the onset of assertive body language accompanied an argument based on credible knowledge and evidence, it appeared to influence the team

more readily than the expertise alone. Therefore, expertise that was accompanied by a powerful delivery carried more influence than expertise alone. On occasion, an emotional delivery accompanied opinions not shared by all. When this occurred, some of the team members made their disagreement known and then backed away from the argument.

Depending on the context of the team, expertise was behaviorally displayed. Based on this finding, the question becomes: What does expertise look like in team interaction? Table 5.2 presents specific ways expertise was demonstrated and perceived by members of the two teams based on the level of complexity required in their interaction.

Table 5.2
Distributed Expertise as Team Behavior

Team	**Behaviors displaying expertise**
Concept and Feasibility Team	• Follows through • Provides evidence via data and other supporting documentation • Argues and advocates effectively • Displays humor when complex topics exceed comprehension • Defers and relinquishes discussion to expert • Trusts colleagues who have demonstrated consistent results
Tactical Team	• Recognizes urgent problems • Describes complex problems • Projects solution of problems • Solves problems • Expects credibility of others' expertise over time • Defers and relinquishes discussion to expert

Figure 5.3 presents how the Concept and Feasibility Team's interaction relied heavily upon expertise. In the context of this team, expertise was distributed by specific team members whenever the nature of the topic required their specialized knowledge. As a result of the subject matter, this team required knowledgeable resources to routinely delve into complex topics. The presence of shared leadership represents the social nature of the interaction that was also interjected throughout the discussion. Overall, the

cognitive aspects of this team's interaction dominated their focus, while their dialogue was simultaneously interspersed with socially influential behavior.

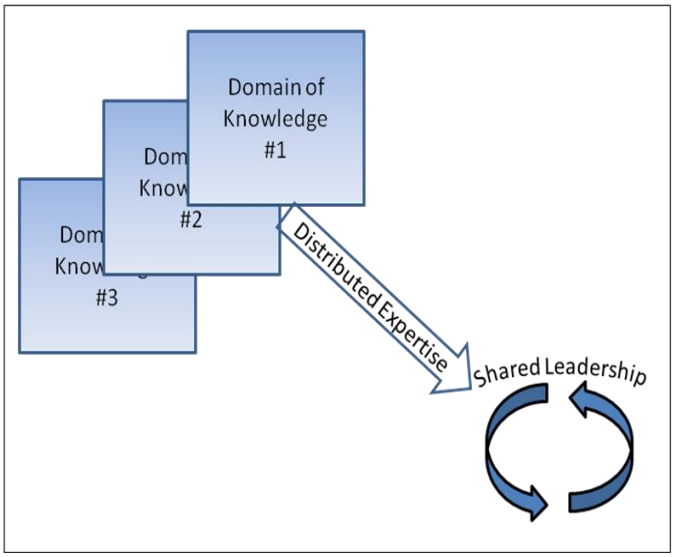

Figure 5.3. Interactions of the Concept and Feasibility Team showing the high reliance on distributed expertise, which led to shared leadership.

In contrast to the Concept and Feasibility Team, the Tactical Team's discussion was based on a lower level of complexity, such as reporting status and updating the team on potential issues. This team's interaction was characterized by shared leadership as their discussion reflected a coordinated and mutual influence process where peer leaders collaborated on common tasks. However, whenever a technical problem needed to be solved, the guidance of the technology expert was generally warranted. In these cases, expertise was called upon to resolve the situation. Nevertheless, these situations were infrequent occurrences. Therefore, Figure 5.4 depicts the nature of the interaction to be primarily peer oriented and influential. However, the inclusion of distributed expertise represents the occasional response taken when technically complex problems arose that

required the team to rely on specific team members with specialized domains of knowledge.

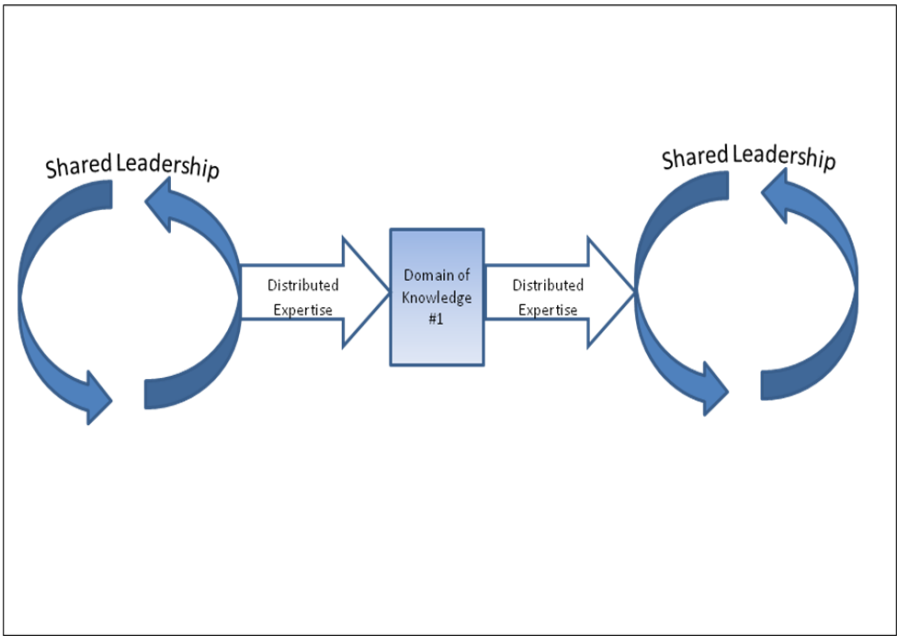

Figure 5.4. Interactions of the Tactical Team showing shared leadership and the occasional reliance on distributed expertise.

Conclusions

There are three major conclusions from this study that inform how shared leadership and expertise occur and how they are related to one another in new product development teams.

1. Shared leadership and distributed expertise operated as two facets of influence. As the saying goes, knowledge is power, and when the content of the subject matter was understood by the majority of the team members, social influence appeared to be more prominent in team interactions. Social influence fell short, however, when the topic turned to greater complexity and required specialized knowledge. In these

situations, the deemed expert provided the answers and the team deferred to that expert. Recent shared leadership theory (Manz et al., 2010) refers to expertise and suggests that shared leadership creates the ideal environment that encourages expert team members to step forward when their specialization is called for in a situation.

In addition, studies from the cognition field known as TMS suggest that longstanding teams provide opportunities to solve problems and complete tasks more quickly as a result of coordinated access to expertise (Lewis & Herndon, 2011). The TMS literature indicates that the distribution of responsibility among team members is a way to increase the amount of knowledge for each task (Lewis, 2003; Wegner, 1987). Theory concerning TMS posits that team members are unlikely to be experts of all subject matters (Lewis & Herndon, 2011). "Differentiated knowledge" is defined as the unique knowledge held by team members, while "shared knowledge" is the knowledge they hold in common (Lewis & Herndon, 2011, p. 1256). These themes of "differentiated knowledge" and the more commonly held "shared knowledge" support how distributed expertise and shared leadership were apparent during new product development team meetings.

2. Trust was an outcome of the relationship between role and evidence of expertise. Trust was a recurring theme, and it was considered "earned" by the individual's performance on the team as opposed to the individual's role in the organization. Observations throughout the research suggested that evidence of one's expertise over a period of time enhanced trusting relationships. It is noteworthy that the teams had sufficient time to experience first hand the expertise of their peers. Unlike teams reported in other studies (Faraj & Sproull, 2000), each of the two teams

experienced longevity, as their work together spanned multiple product initiatives over a period of years. Therefore, expertise was experienced over time by the strength of formal presentations, supplemented by documented evidence and follow through. Gardner et al. (2012) pointed out that teams that are mature and work together over an extended period engage in "ongoing mutual readjustments" (p. 1000). As the members of each team continued their long-term commitments together, they experienced the benefit of learning when their projections and proposed solutions became reality. Nevertheless, they also experienced when their assumptions did not provide the results expected.

3. Expertise accompanied by an emotionally powerful delivery carried more influence than the evidence of expertise alone. In these cases, expertise partnered with influential communication tactics helped win the support of the team as long as the argument remained factual and based on one's expert domain. On the other hand, when an emotional undertone accompanied an opinion about basic information known by the majority of the team, this dynamic influenced either a withdrawal from the discussion or an overt reminder to bring the discussion back to a professional level. Related to the emotional undertones of team dialogue, humor was often used as a tactic to normalize the relationship of the team members when the discussion became negative in tone. In addition, the use of humor helped steer the team through conversations that were highly technical in nature and was introduced whenever complex topics placed individuals at a disadvantage. The humorous comments set the stage for the team to socially reconnect with one another in order to leverage each other's unique experiences and expertise to advance their shared objectives.

Limitations of the Study

This study is limited by the fact that it is based on only two new product development teams representing one life insurance carrier. While this case study compared the interactions of two teams with unique missions, several of the team members overlapped the two teams. It is possible that their knowledge about the results of the Tactical Team could predetermine future actions taken by the Concept and Feasibility Team. Having first-hand knowledge of the risks exposed at launch could inhibit the Concept and Feasibility Team's creativity for future product design. Nevertheless, it is also possible the lessons learned by the Tactical Team could improve both teams' experiences, leading to greater success.

Implications for Research, Theory, and Practice

This section reviews opportunities for research, theory, and practice to further discover trends and relationships that have implications for theory and its practical application in the workplace. This study provides a start to better understanding how shared leadership and the distribution of expertise occur and relate to each other in collectives situated in a business environment. Although a great deal has been written about shared leadership theory and expertise, there is insufficient research based on teams in office environments that include entire systems such as new product development.

Research

Many empirical studies about shared leadership in teams cover temporary teams where the members are frequently substituted and have no history of working together (Bechky, 2006; Klein et al., 2006; Bigley & Roberts, 2001). In contrast, this study has

implications for longstanding teams where the members' commitment to teamwork surpasses any single project. It is recommended that more research be conducted to build on what has been learned in this comparative case study, where the simultaneous interaction of social influence and expertise influenced highly complex knowledge work. What is suggested is further study on understanding the microprocesses of technically specialized team interaction and decision making in an office setting. In addition, more knowledge is needed concerning how distribution of expertise influences innovation in other industries.

Influence is present in interactions, whether teams are made up of peers or participants of varying authority levels. It would be useful to better understand how team members who represent varying authority levels interact with members who represent differing expertise and in what cases expertise is more relevant as a source of influence. Today's organizations rely heavily on teams that have members with equal authority but represent differing domains of knowledge. Further study is called for to better understand the dynamics of leadership and expertise when no single team member has sufficient knowledge to make all the necessary decisions. Specifically, what is needed is an understanding of how distribution of expertise affects certain outcomes such as quality decision making compared to influence rooted in authority. Additionally, it would be helpful to learn which aspects of expertise are viewed as carrying greater weight in a dynamic collective and why. Further studies to measure team deference by domain when facing complex problems would be a good start in this area.

Theory

Currently there is no single theory that sufficiently explains the dynamic nature of team interaction when expertise is present and leadership is shared within the team. As noted by Gardner et al. (2012), the team literature does not reveal the way teams integrate members' knowledge resources, particularly when there are "changing contextual features" (p. 999). Much of the writing in the field of expertise deals with deliberate practice and attainment of knowledge. TMS provides an alternative theory that describes both differentiated group knowledge that reflects diverse, specialized knowledge and shared knowledge that characterizes knowledge members hold in common. Another theory from the cognitive field proposes that the coordination of expertise concerns "socially shared cognitive processes" that meet task and knowledge dependencies (Faraj & Sproull, 2000). This theory, like TMS, links team interaction with to expertise.

Given the diversity of terminology that attempts to depict team interaction, influence, and expertise, a greater convergence of theory is needed to explain how expertise is distributed among highly specialized team members in the context of collective interaction. Shared leadership theory has suggested that knowledge in a team is inherent based on the diversity of its team members. Stemming from team theory, this assertion does not sufficiently explain how knowledge represented by individuals in a peer-oriented team influences team members. A greater collaboration of theorists across branches of knowledge such as cognition, teams, and shared leadership is needed to inform emerging theory concerning expertise in highly specialized working groups. As the world continues to move towards broader and more complex systems, research that reflects multiple disciplines needs to come together to provide comprehensive

explanations that are insightful and will inform research development and operations in the future.

Practice

In new product development and in other technical fields, peer influence as shared leadership is possible when team members hold equal levels of authority. However, when specific expertise is needed for complex subject matter, organizations need to ensure that sufficient expertise is present in team membership and that team interaction is distributing this expertise. Up to now, expertise has been viewed as an individual characteristic derived from specialized domains of knowledge. However, in teams where members are task interdependent, expertise is manifested as a process between and among team members based on what is needed by the team at the time.

Team members would benefit from openly discussing the expertise needed for specific team objectives and who holds that expertise so it can be operationalized in their taskwork. This study determined a symbiotic relationship between the experts who demonstrated confidence by sharing rich information in the team while team members who were not as knowledgeable were willing to relinquish their input in favor of the perceived expert's. Acknowledging the benefit of cognitive trust in teams will help business leaders understand how and why evidence of expertise plays a significant role in situations where there is a focus on technically complex problem-solving and innovation. Providing guidance to teams to facilitate discussion about demonstrating credibility as part of performing in their roles will help enhance collaboration in the workplace (Chowdhury, 2005; Kahneman, 2011).

More practical knowledge is needed to help teams navigate through the complexity of today's technical information that is in a constant state of change and poses challenges for even the experts. This study noted that facts were acknowledged more readily when the information was accompanied by a strong emotional delivery. On the other hand, expert opinions were accepted less readily even when delivered with emotion. More studies are called for on the relationship of social influence and expertise in order to educate team members on how to differentiate, evaluate, and respond to facts versus opinions stemming from specialized knowledge when dynamically delivered.

In summary, the understanding and appreciation of the role of expertise in teams needs to evolve further. Expertise at the team level is a behavioral dimension that has significant implications for the future of new product development work. There is no doubt that knowledge requirements in today's organizations are extremely complex. The source of expertise to solve problems, make decisions, and take appropriate action is no longer synonymous with individual leadership.

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APPENDIX A:

DEFINITION OF KEY TERMS

Term	Definition
Cognitive trust	Trust one holds for another based on role performance and professional credentials.
Distributed expertise	Symbiotic team behavior as evidenced by deference to the expert when the team relies on expert team members during situations that require highly specialized domains of knowledge; distributed expertise ultimately informs and influences team interaction.
Distributed leadership	Leadership practice in interaction with leaders and followers (Spillane, 2005).
Expert power	Power resulting in the target person complying because he or she believes that the agent has special knowledge about the best way to do something (Yukl, 2006).
Expertise	Specialized knowledge within a particular domain that is limited to a certain field and not easily transferable (Boster & Johnson, 1989; Chi, Glaser, & Farr, 1988; Zimmerman, 2006).
Expertise coordination	Socially shared cognitive processes that develop and evolve to meet the demands of task-based knowledge dependencies (Faraj & Sproull, 2000).
Mutual adjustment	A means for team members to coordinate with one another. It is the action each specialist in a team has to make to "adjust his actions to the actions of others" (Thompson, 1967).
Shared cognition	Holding similar mental maps; operating under a common set of assumptions (Burke, Fiore, & Salas, 2003).
Shared leadership	"A dynamic, interactive influence process among individuals in groups for which the objective is to lead one another to the achievement of group or organizational goals or both" (Pearce & Conger, 2003; Pearce et al., 2010).
System 1	The system of thinking that operates automatically and quickly, with little or no effort and no sense of voluntary control (Kahneman, 2011).
System 2	The system of thinking that allocates attention to the effortful mental activities that demand it, including complex computations. The operations of System 2 are often associated with the subjective experience of agency, choice, and concentration (Kahneman, 2011).
Task interdependence	The degree to which goal accomplishment requires completing related or dependent subtasks (Cox, Pearce, & Perry, 2003).
Transactive memory system	A combination of the knowledge possessed by particular group members and an awareness of who knows what (Wegner, 1986; Liang, Moreland, & Argote, 1995).

APPENDIX B:

CODES USED IN DATA ANALYSIS

Theoretical Codes for Distributed Expertise

Code #	Code Label	Example	Reference
E1	Experts alternate by initiating or countering dialogue	Offers information or informed opinion	
E2	Team members respond to experts	Listens, asks questions, counters comments made	
E3	Special domain knowledge	Actuarial, product, marketing, or IT (technology) terminology	Patel & Groen, 1991
E4	Reasoning strategy	Forward directionality of the inferences; relies on chain of inferences; extrapolates; future orientation	Patel, Groen, & Arocha, 1990; Patel & Groen, 1991; Patel, Kaufman, & Magder, 1996
E5	Pattern recognition	Organization of knowledge by theoretical principles	Patel & Groen, 1991, p. 99
E6	Procedural knowledge	Information such as new product stages, competitive benchmarks, state filing	Eraut, 1994
E7	Content knowledge	Principles such as product features, pricing, mortality, surrender and mortality and expense charges and hedging	Eraut, 1994
E8	Practical knowledge	Know-how; rules of thumb	Eraut, 1994
E9	Personal knowledge	Experience in one's domain	Eraut, 1994
E10	Course of action	Detailed course of action containing contingencies	Holyoak, 1991
E11	Diagnostic questions	Questions that analyze characteristics leading to the cause or nature of the problem	Serfaty, MacMillan, Entin, & Entin, 1997
E12	Use of exemplars	Reference to industry role models	Orasanu & Connolly, 1993
E13	Use of analogy	Comparisons of structurally different and similar items	Orasanu & Connolly, 1993

Due to the emergence of codes as the transcripts were read and coded, E8, E9, and E13 were not used in the coding process. Additional codes were created during the coding process that were more relevant to the subjects discussed.

Theoretical Codes for Shared Leadership

Code #	Code Label	Example	Reference
L1	Influence due to momentary task and leadership challenges	Exertion of influence by any member regardless of expertise; lateral influence; power sharing	Schwandt, 2007; Palus, Van Velsor, O'Connor, & McGuire, 2008, p. 639; Cox, Pearce, & Perry, 2003
L2	Multidirectional interactions	Fluid interactions between team members	Fletcher & Kaufer, 2003
L3	Mutual adjustment; social give and take	Team members adjusting actions to others	J. D. Thompson, 1967; Cox, Pearce, & Perry, 2003
L4	Coordination and commitment to work as a team	Team members offering to handle a task	Cox, Pearce, & Perry, 2003
L5	Maintaining progress	Keeping track of schedule; meeting published milestones	
L6	Raising organizational issues	Cost, time, and authority to make decisions	
L7	Team decisions on a course of action	An agreed-upon approach or strategy	

Due to the formulation of more accurate codes as they emerged during the coding process, L2 and L6 were not used as codes. The new codes that emerged from the data as the transcripts were reviewed are presented on the following 2 pages.

Empirical Codes for Distributed Expertise

Code #	Code label	Example
E14	Feasibility	Cost, marketability, profitability
E15	Role	Individual represents department; possible expertise
E16	Credibility	Accuracy of information; follows through
E17	Evidence	Facts, supporting documentation
E18	Trust	Consistent experience with team member
E19	Presence	Perception of expertise
E20	Competitive intelligence	Benchmarking, knowledge of other companies' products and profit
E21	Product design	Activity to design products, covers specifications and how they operate
E22	Field input	Ideas and requests from sales offices and producers
E23	Understand concept	Comprehension of abstract idea
E24	Mechanics of product	How the product operates; made up of calculations
E25	Forecasting future	Projecting environmental factors and impacts to profit of products
E26	Operationally complex	The complicated manual or systematic administration of product
E27	Expertise in team	Specialized knowledge residing within team members
E28	Expertise outside of team	The specialized knowledge required through an individual outside team, e.g., consultant
E29	Statistics, formulas	Mathematical projections, trends
E30	Product specifications, features, and benefits	Descriptions of product chassis and enhancements
E31	Policy rates and charges	Numerics representing charges, values, caps, and minimums
E32	Commission rates	Producer financial incentives
E33	Product complexity	Level of difficulty to comprehend
E34	Deference	Respect to others with more knowledge
E35	Supporting documentation	Evidence of facts and figures to supplement argument or advocacy
E36	Information	Data translated into context
E37	Perceived lack of expertise	Lack of knowledge based on weak presentation or lack of participation
E38	Presentation of ideas	Demonstration of ability to communicate ideas

Empirical Codes for Shared Leadership

Code #	Code label	Example
L8	Humor	Jokes, poking fun, use of puns
L9	Self-deprecation	Humility
L10	Oversimplify	Tendency when there is a lack of sufficient knowledge
L11	Questioning	Act of asking questions
L12	Responding	Act of answering questions
L13	Defuse conflict	Act of reducing conflict
L14	Agreement	Demonstrates support
L15	Disagreement	Demonstrates lack of support
L16	Drops argument	Advocacy dropped abruptly
L17	Emotional response	Response accompanied by emotion
L18	Reports	Presents data or status
L19	Gives assurances	Provides supportive information
L20	Accelerates topic	Rushes discussion
L21	Closes topic	Stops discussion
L22	Challenges	Strongly questions, often with emotion
L23	Creative exploration	Pitching and building on ideas
L24	Veering off topic	Changing topics or losing focus of topic
L25	Status of project	Level of completion based on timelines
L26	Consensus	Coming to agreement on the team after discussion
L27	Confidence	Comfort in data or person presenting
L28	Opinions	Feelings about a topic; not necessarily based on facts
L29	Influence on team decision making	Power over team's position on topic
L30	Team relationship	How team members feel about each other
L31	Comfort level	Confidence in each other
L32	Collaboration	Give and take between team members
L33	Respect	Feeling of admiration for each other
L34	Trust	Experience leading to trust
L35	Experience	Longevity in the role; events related to role leading to greater development of knowledge

APPENDIX C:

INTERVIEW QUESTIONS

1. What types of information given at the meetings influence the team's support of certain product ideas?
   a. What are the sources of that information?
   b. What types of information influence a lack of support of certain product ideas?
   c. What are the sources of that information?

2. What kinds of reactions from team members influence others to support an idea?
   a. What kinds of reactions from team members influence others to question the validity of an idea?

3. When support is demonstrated, do you consider the source of the team members' expertise?

4. What do you see as the relationship between acceptance, the source and context of expertise?
   a. Is all the expertise needed to make decisions represented in the team, or do you need to go outside to supplement expertise?
   b. When do you need to go outside?

5. What is the approval process for implementation?
   a. Does the team have autonomy over decisions made, or does it require approval from outside the team?
   b. Describe influences: Do they originate from expertise or other behaviors such as teamwork?
   c. How do you know they are experts, and why they are experts?