THE INFLUENCES OF ORGANIZATIONAL BEHAVIOR ON CORPORATE PACKAGING DECISION MAKERS FOR DURABLE (REPAIRABLE) GOODS PRODUCERS

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ABSTRACT

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This research explores how organizational behavior influencing packaging decision-makers (PDMs) and how their packaging decisions subsequently mitigate or create corporate risks. Case research included durable goods producers' PDMs for assembly components, finished goods, and serviceable repair parts.

The research found that despite the need for fact-driven decisions, PDMs are influenced by organizational behaviors that are structure-based and relationship-based. Structure-based behaviors include a PDM's organizational accountability and responsibilities. For example, a PDM that is accountable to an organization’s primary function, such as inbound logistics, is likely to design packaging that emphasizes transportation efficiencies over other organizational packaging needs. Similarly, a PDM that has a broad range of organizational responsibilities, such as inbound logistics and purchasing, is likely to design packaging that is better for the organization. Although independent, the organizational accountability and responsibilities variables are correlated in that they are often manipulated simultaneously.

Organizational behaviors that are structure-based and relationship-based include PDMs' reporting levels and structures. For example, a PDM that does not have a management reporting level is less likely to have the authority to design packaging that satisfy the organization's diverse packaging needs. Similarly, a PDM structured as a department is more likely to have the resources and authority to design packaging that is better for the

organization. Although independent, the organizational reporting level and structure variables are correlated in that they are often manipulated simultaneously.

Relationship-based organizational behaviors include PDMs' organizational frames and corporate change. For example, packaging decisions made in a politically-framed organization are likely to be based on personal power rather than the organization's diverse requirements. Regarding corporate change, PDMs are influenced by strategic changes to organizational accountability, responsibilities, reporting levels, and structures. Corporate change often inadvertently alters PDMs' organizational frames.

Organizational changes reflect corporations' perceived value of packaging with respect to new and emerging corporate strategies. For this reason PDMs' organizational environments are not always static, as firms seek out the best approach to managing packaging decisions. Several strategies for managing PDMs were found including centralization, consolidation, and the use of PDMs external to their organizations.

The research explored how positive and negative influences of organizational behaviors mitigate or create packaging-related corporate risks, respectively. Positive influences enable packaging to protect brand reputation, improve consumer loyalty, avoid costs, and maximize profits. Negative influences result in suboptimal or dysfunctional designs that create risks.

The most significant finding is that corporations do not always have PDMs for assembly components, finished goods, and service parts. In some cases this is a strategic decision. This is important to understand because recurring product innovation, evolving packaging science, and emerging corporate strategies require packaging to not only be effectively managed but also be strategically managed.

Dedicated to my father, Donald Claire Moyer, whose love, support, and sacrifices made all of my accomplishments possible.

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KEY TO ABBREVIATIONS

EOP: Enterprise Optimal Packaging

IT: Information Technology

OB: Organizational Behavior

PDM: Packaging Decision Maker

PMC: Packaging Management Council

POR: (Packaging) Plan of Record

QFD: Quality Function Deployment

SSP: Strategy, Structure, and Performance

VCM: Value Chain Model

CHAPTER 1. INTRODUCTION

Corporations rely on packaging to maximize profits. Corporate packaging decision makers (PDMs) must account for the costs and benefits of packaging functionality such as protecting products, adding utility, and communicating information (Lockhart 1997). Packaging decisions are also made for different packaging needs throughout corporate supply chains. For durable goods producers, this includes the packaging of raw materials and components to assembly lines; finished goods packaging distributed throughout networks to consumers; and service parts packaging used for product repairs.

Enterprises also manage packaging decisions to maximize the strategic value of packaging. Recurring product innovation, evolving packaging science, and emerging corporate strategies require that packaging not only be effectively managed but also strategically managed.

Despite the need for both strategic and profitable function-driven decisions, PDMs are also influenced by organizational behavior.

The study of corporate packaging management is sparse and typically focused on PDMs' organizational accountability and responsibilities. While these organizational behaviors are important, other behaviors can influence packaging decisions both positively and negatively. Furthermore, the consequences of organization-based influences, such as financial risks, have not been explored. Typical research methodologies have included case studies of select companies or broad surveys of packaging professionals. The former acknowledge the limitations of extrapolating conclusions to other organizations, while the latter are limited to proportioning cursory information from very diverse samples.

After decades of interspersed exploratory and explanatory research, a general organizational solution to strategically managing the packaging function has not been found. This suggests that even *if* an ideal organizational construct were devised it *may not* be universally applicable. This research more broadly explores organizational behavior that influences PDMs. It also considers the potential impact of such influences including corporate risks that are mitigated or created by packaging decisions.

This introductory chapter begins with an overview of packaging management. The chapter then summarizes the research objectives, a conceptual model, the research question, research scope, definition of terms, research propositions, methodology, and the significance of the research.

1.1 Packaging Management Overview

Packaging can contribute to corporate competitiveness in many ways. From minimizing damage costs to enhancing brand recognition, packaging impacts corporate bottom lines. For this reason, it is important to understand how enterprises manage packaging and their PDMs.

Packaging decisions blend product attributes with corporate packaging requirements. Corporate PDMs consider the three previously mentioned packaging functions of protecting products, adding utility, and communicating information. PDMs also perform certain universal tasks such as designing, testing, and documenting packages (Kufahl 1974; McGinnis 1977). Commonly, PDMs also develop three types of packaging including primary, secondary, and tertiary packaging (Hellstrom and Saghir 2003). Primary packaging contains the end product while secondary packaging aids in handling and apportioning primary packages. Tertiary packaging facilitates the storage and distribution of secondary packaging.

PDMs also design packaging for different products throughout their corporate supply chains. For example, durable goods producers require packaging for inbound assembly components, outbound finished goods, and serviceable repair parts. This diversity of corporate products, unique product attributes, and various package design considerations uniquely position PDMs within their organizations.

Corporate PDMs also balance the often-competing packaging needs of different organizational functions.[1] For example, a purchasing department's need to minimize packaging material costs can directly conflict with the marketing department's need to increase brand recognition through enhanced primary packaging. Through this balancing act, PDMs seek to create enterprise optimal packaging (EOP) that satisfies all of the enterprise's packaging needs *as best as possible*. Because corporate packaging needs can conflict and EOP may not fully satisfy organizational functions, PDMs can be subjected to organization-based influences. While some organizational behaviors have positive influences, other organizational behaviors can negatively impact packaging decisions. Corporate packaging management must understand these organizational influences in order to minimize packaging-based corporate risks.

Packaging decisions that are not optimal for the organization can introduce several types of risks for the enterprise. These include dysfunctional and suboptimal packaging designs. Dysfunctional packaging fails to fulfill at least one of the three basic packaging functions. For example, packaging that does not adequately protect products not only increases corporate

[1] The term *function* is used in this text to describe an organizational department, activity, or functional area such as marketing. While the term *department* may be more intuitive, its use may erroneously imply organizational characteristics such as being highly structured or well populated. This text considers organizational functions whose structure may not be well defined or are performed by a single individual.

costs but can also impact brand reputation. Suboptimal packaging fails to fulfill one or more key corporate packaging needs. For example, new elaborate packaging that improves shelf-appeal and brand recognition may satisfy the marketing department's needs. The same packaging can reduce operational efficiencies and drive costs for manufacturing and warehousing functions.

Other types of package-based risks are detrimental to society and the environment. For example, packaging that uses excessive material can contribute to the over-consumption of limited resources or even inhibit recycling efforts. Such packaging can introduce significant risk to enterprises that rely on their brand reputation. Enterprise risk management requires awareness of the diverse packaging-based risks in order to assess and mitigate them.

In order to mitigate risk, corporations often focus packaging management on their PDMs' organizational responsibilities and accountability. By actively managing these two organizational behaviors, enterprises can minimize detrimental or inadvertent influences on PDMs and their designs.

PDMs' organizational responsibilities are defined by the various corporate functions whose needs are considered in packaging decisions. Corporate functions such as marketing, operations, distribution, and purchasing can be elements of formal decision-making criteria. Alternatively, their needs can simply be considerations in less formal or intuitive packaging decision-making. Additional corporate functions such as research, product development, industrial engineering, graphics, legal, and quality assurance can also be included in PDMs' organizational responsibilities. Packaging management that actively configures PDMs' organizational responsibilities can better enable the creation of EOP.

Corporations also manage packaging by manipulating the PDMs' accountability. This organizational behavior is the PDM's reporting alignment within the enterprise. PDMs can be stand-alone functions and report directly to upper management. Alternatively, PDMs can be integrated or embedded within another corporate function and indirectly report to organizational management. Organizations that have integrated PDMs demonstrate one of several organizational approaches to packaging management. Integrated PDMs can indicate an organization's strategic need to leverage particular packaging benefits. Conversely, an integrated PDM can indicate an organization's general disregard for the potential value of packaging. The organizational embedding of a PDM may simply be inadvertent or results from a historical organizational preference. In this case, the passive management of packaging can indicate an organization's disregard for packaging and its strategic value. By properly managing PDM's accountability, organizations can empower PDMs to create EOP and mitigate packaging-based risks.

In order for corporations to strategically manage packaging, they must be aware of and account for all potential organization-based influences. This research focuses on structure-based and relationship-based organizational behaviors that influence PDMs. The next section describes the research problem and objectives.

1.2 Research Objectives and Conceptual Model

The research objectives of the dissertation are to: (1) identify organizational behavior that influences corporate PDMs, (2) identify the effects of organizationally influenced decisions on packaging designs, and (3) identify the risks of organizationally influenced packaging designs.

The model shown in Figure 1 contains these items and conceptualizes their theoretical relationships. The development of these relationships is discussed in detail in the Chapter 2.

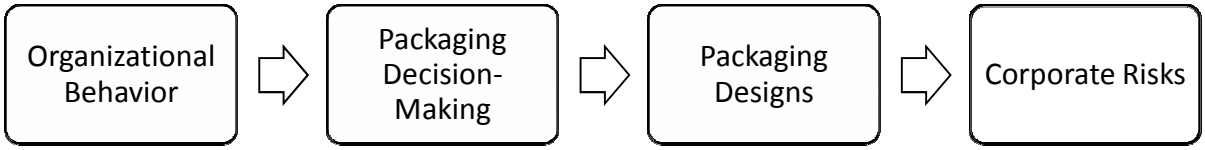

Figure 1. Conceptual Model of Theoretical Relationships

1.3 Research Question

The research question addressed is:

How does organizational behavior influence packaging decisions?

This research explores the influences that both structure-based and relationship-based organizational behaviors have on corporate PDMs. Structure-based behaviors include the PDM's organizational accountability, organizational responsibilities, hierarchical reporting level, and structural configuration. Relationship-based organizational behaviors include the PDM's environmental frame and corporate change. It should be noted that these organizational behaviors are not exclusively either structure-based or relationship-based. Instead, these behaviors occasionally exhibit both structure and relationship-based characteristics.

1.4 Scope of Research

The focus of the research is on packaging decisions made by durable goods producers having multiple packaging needs within their corporate supply chains. Every durable goods producer potentially has packaging requirements for three different products: (1) raw material and components for assembly operations, (2) finished goods, and (3) repair parts for servicing

finished goods. These three corporate packaging applications have diverse requirements and the packaging may be designed by different PDMs in different organizational functions. Exploring how individual companies manage multiple PDMs provides insight to how organizational behavior influences packaging decisions.

1.5 Definition of Terms

Several organizational behavior terms are used throughout the research. The definitions presented below are integral to understanding the research propositions.

- *Accountability* – The reporting hierarchy or vertical alignment of a corporate function within an organization defines its accountability. In this research, accountability is defined by the function that the PDM reports to within the organization.
- *Responsibilities* – The various corporate functions considered in decision-making defines the decision-makers' responsibilities. PDMs' consideration for organizational responsibilities is accomplished through decision-making tools and processes such as decision-trees and priority lists. The organizational breadth of an empowered corporate decision-maker is an indication of the PDM's organizational responsibilities.
- *Reporting Level* – Reporting level is defined by the hierarchical level or *height* of a corporate function within the organization. Although uniform business descriptors are illusive, an organizational reporting level is typically indicated by the title of the function's manager such as *senior manager*. Because PDMs' reporting levels can include non-management individuals, reporting levels include a range from non-management to executive role PDMs. Commonly, the threshold between management and non-management reporting levels considers the existence of direct reports or subordinates.

- *Structure* – Structure is the organizational construct or configuration of a corporate function. In corporate decision-making this can be an individual or multiple individuals in various organizational configurations such as groups, teams, and departments. The number of PDM human resources is one indication of organizational structure. The threshold between departments and groups or teams typically considers the existence of a manger having direct reports or subordinates. This is not always the case as some groups prefer a less formal term than *department* due to their working environment.

The terms above are further reviewed in the next chapter, the section 2.3, "Corporate Packaging Decision Makers."

- *Frame* – A frame is the organizational working environment of a corporate function. It can be described by select characteristics of the organization and leadership styles. In research, it is a predefined perspective(s) for observing phenomena. This term is further reviewed in the next chapter, section 2.12, "Framing Theory in Organizations."
- *Change* – Change, or corporate change, refers to the unavoidable changes within an organization. For corporations, this typically results from their dynamic and competitive environments. Change also results from the deliberate or unintentional organizational manipulations of the behaviors defined above.
- *Packaging decisions* – Packaging decisions are made within organizations that result in packaging designs that are implemented and used. Once the packaging is in use, the benefits of optimal packaging are realized. The risks to the corporation from suboptimal and dysfunctional packaging designs are also realized. In this way the influences of organizational behaviors on packaging decisions can mitigate or create corporate risks.

1.6 Research Propositions

There are six research propositions.

P_1: The PDM's organizational accountability influences packaging decisions.

P_2: The PDM's organizational responsibilities influence packaging decisions.

P_3: The PDM's organizational reporting level influences packaging decisions.

P_4: The PDM's organizational structure influences packaging decisions.

P_5: The PDM's organizational frames influence packaging decisions.

P_6: Organizational changes influence PDMs.

The development of these propositions is discussed in detail in the next chapter.

1.6 Methodology

Qualitative research was conducted using case study methodology to explore organizational behaviors that influence corporate PDMs. The research also explored the effects and risks of organizationally influenced packaging decisions. The research method included in-depth interviews of employees having intimate knowledge of package decision-making.

Five different durable goods producers were selected including heavy equipment, automobile, appliance, printing equipment, and computer manufacturers. Most of these firms have different packaging needs at different points in their supply chains. Packaging decision-making for assembly components, finished goods, and repair parts enabled comparative analysis of organizational behavior within each organization. This embedded case study

approach enabled both inter- and intra-case comparisons and analysis. The research methodology is presented more fully in Chapter Three.

1.7 Significance of the Research

The significance of this research is its contribution to the study of packaging management including how organizational behavior influences packaging decision-making and how the resulting packaging designs mitigate or create corporate risks. With respect to organizational behavior, it examines the influences that corporations have on their PDMs both intended and otherwise. By exploring this relationship, the research contributes knowledge concerning corporate packaging decision-making processes that culminate in EOP. The research results also explore the consequences of negatively influenced packaging designs.

Although case study findings are limited in the ability to be generalized to other corporations, the research has significance for organizational managers as it provides a broader and more structured overview of organizational behaviors than previous research. The research and findings also uniquely include corporate risks resulting from organizationally influenced packaging decisions. These insights enable enterprises to mitigate packaging-related risks through strategic packaging management.

1.8 Presentation

The balance of this dissertation is as follows. Chapter Two presents the relevant literature on packaging management and the theoretical development of the conceptual model. Chapter Three presents the case research methodology and introduces the selected corporations and their embedded cases. Chapter Four presents the results and findings of the

research. Chapter Five summarizes the research and its limitations as well as providing suggestions for future research. The appendices contain detailed case study data.

CHAPTER 2. LITERATURE REVIEW AND THEORY DEVELOPMENT

Regarding the general lack of literature on packaging management and business, Guss (1967, 9) observed, "There is no area of modern business so widespread in its operation and so lightly treated in writing." While literature on corporate packaging has accrued since those words were written over forty years ago, the amount is still relatively limited, some of which is also dated.

2.1 Packaging Management Literature Review: Methodology, Characteristics, and Limitations

This research seeks to develop a deeper understanding of packaging management by investigating how organizational behavior influences packaging decision makers. A review of existing academic and trade press literature was conducted on various corporate and packaging actions and interactions. Emphasis was placed on determining: (1) who makes corporate packaging decisions, (2) how packaging decisions are made, (3) what are the packaging decision criteria, and (4) how corporations manage packaging decisions. Initial searches used select key packaging terms such as: packaging engineering[2], packaging organization, packaging decisions, and packaging management. Relevant literature also provided additional topics, terminology, and documents for subsequent searches such as corporate packaging strategies. For this reason, this literature summary addresses the initial packaging topics above and other topics that are germane to the research subject.

[2] The colloquial term "packaging engineering" is used throughout the packaging industry even though packaging is not an accredited engineering discipline (Raper 1989). While "packaging management" may more accurately describe the discipline, corporations rarely use this term to describe the organizational function that includes corporate packaging decision makers.

In general, the existing literature on packaging management and PDMs is very limited in amount, some of which is dated. Regarding the amount, the frequency of literature pertaining to packaging and organizational behavior is infrequent and appears to coincide with the periodic intersection of these two disciplines as prompted by innovations. Both packaging innovation (Twede 1992) and emerging business trends seem to have produced literature relevant to the research subject. An example of this is the “logistical renaissance” of the ‘80s and '90s that spawned the science of supply chain management (Bowersox and Closs 1996). This corresponds with literature that touts the value to enterprises that leverage packaging decisions towards logistical needs (Hock 1985).

Another example of the intersecting disciplines was the rise of consumerism in the ‘60s and brand proliferation of the ‘70s, when packaging and business became intertwined and at times, indistinguishable from one another. This spawned various literature that advised organizations to leverage packaging as an integral part of their product and marketing (Guss 1967).

Regarding the age of the existing literature, a significant portion is dated and, for this reason, obtainable works as old as fifty years are included in this literature review. Caution has been exercised with dated material particularly when it pertains to the then contemporary and impending packaging issues. Yet, the literature review confirms that many of those same packaging issues persist today and are not anachronistic. An example of this is the issue of packaging waste. Deming (1962, 12) noted packaging’s “disposability issue” as one of the neglected packaging areas. It was further described as a research opportunity that could lead to “an almost untapped mine of customer satisfaction.”

Much of the existing research is also limited in scope such as case studies of specific companies and industries. Trade press literature is also limited by focusing on specific readership interests (i.e. logistics, marketing, purchasing, etc.).

2.2 Packaging Decision-Making

The analysis of existing literature and research begins with a basic understanding of how organizations make packaging decisions. This includes being aware of the various names corporations use to describe their packaging function and PDMs. Also required is an understanding of the various organizational configurations used by corporations to make packaging decisions.

The term *packaging* can mean different things to different people. Packaging, as a noun, can refer to a package, materials, a corporate operation, or an organizational decision-making function. Packaging, as a verb, can describe the act of containing a product. Internationally, *pack* and *packing* are common and accepted terms for packaging. This diversity of diction can potentially lead to corporate confusion.

Corporate use of the term *packaging* is also diverse. The corporate packaging decision-making function or activity is often described differently from one organization to the next. *Packaging*, *packaging design*, and *packaging engineering* are all used to describe organizations' packaging decision-making functions.

The origins of these organizational descriptions are often rooted in the nature of specific industries. For example, cosmetics packaging often performs a consumer-marketing function. Predictably a cosmetics company may describe their packaging decision-making function as *packaging design*. Another example is the automotive industry. With its rich history in

powertrain engineering, it is not surprising that automotive packaging decision-making functions are commonly called *packaging engineering*. The correlation between organizational monikers and industry types is not necessarily a strong one. Naming variations exist from company to company even within the same industry. It appears that any organizational naming convention for the packaging function is in practice a matter of corporate preference or even habit.

Packaging decisions can be very complex due to the nature and variety of a company's products. Packaging decisions can have repercussions throughout an organization's supply chain and either capture efficiencies or drive incremental costs. For these reasons it is not uncommon for organizations to use formal packaging decision criteria to ensure that decisions reflect strategies that are important to organizations. Formal packaging decision criteria can resemble full cost analysis models that consider dozens of cost-driving factors. Packaging decision criteria can also incorporate weightings to further emphasize selected factors over others. For example, corporations that have anti-counterfeiting strategies may emphasize the intangible benefits of anti-counterfeiting packaging features over their tangible material costs (Spink 2009).

Packaging decision-making can also be informal and intuitive such as choosing the best sized shipping carton. Informal packaging decision-making processes may consider only a few factors due to the simplistic nature of products or minimal risks of inadequate packaging to the corporation. The complexity and formality of packaging decision criteria often correlate to organizations' complexity and their products (Hise and McNeal 1988).

Both formal packaging decision criteria and informal decision-making processes can be influenced through organizational behavior. For example, reorganizing a PDM function can lead to changes in packaging decision criteria to include new factors that must be emphasized or deemphasize previously important factors. The potential for this behavior-based influence is important because corporate organization can be very dynamic. One survey noted that 75% of responding PDMs had been reorganized or restructured within the previous five years (Falkman 2001a). Frequent organizational restructuring can impact even well established formal packaging decision criteria and informal packaging decision-making processes.

2.3 Corporate Packaging Decision Makers

Regardless of how diverse packaging decisions are made, there are "certain universal requirements in packaging development" (Sensbach 2001, 57). These are tasks such as designing, testing, and creating specifications for product packaging (Kufahl 1974; McGinnis 1977). PDMs are simultaneously tasked with the three basic functions of packaging: protection, utility, and communication (Lockhart 1997).[3] Additionally, there are three common types of packaging: primary, secondary, and tertiary (Hellstrom and Saghir 2003). Lastly, corporate PDMs may develop the packaging for specific points in corporations' supply chains. For example, a durable goods manufacturer has unique packaging for unassembled components, finished goods, and serviceable repair parts.

[3] Several authors suggest more than three functions of packaging. Soroka (2002) defines four functions: contain, protect/preserve, transport, and inform/sell. Hanlon (1971) defines packaging functions as: contain, carry, dispense, preserve, measure, communicate, display, motivate, promote, glamorize, build up or disguise.

Different industry segments also have unique packaging demands such as branding or regulated labeling. These industries include food, pharmaceuticals, consumer goods, and industrial goods among others. Each industry has the potential to distinctly influence their corporate PDMs.

While all package decisions have common functional considerations at the most basic level, they quickly diverge and can become nearly unique at the individual corporate level. For example, the need for packaging to protect a personal computer from impact damage seems like a universal challenge among computer manufacturers. But observations of computer packaging from different companies, such as between Apple and Dell, show that distinctive packaging choices are made that transcend the need for simple product protection or even brand differentiation.

Despite being limited nearly all of the literature endorses the importance of packaging to organizations or entire industries. Regardless of industry, corporations have been urged to enhance their packaging expertise rather than leaving packaging decisions unleveraged (Brody 1972).

The universal recommendation to heighten packaging awareness is frequently accompanied by specific organizational recommendations. These typically include modifying the packaging function's organizational structure, responsibilities, accountability, and reporting level. This is demonstrated by survey-based research that commonly questions individual PDMs regarding how their organizations address PDM attributes (Deming 1962; Nowack 1965; Bardi and Kelly 1974; Raphael and Olsson 1976; McGinnis 1977; McGinnis and Hollon 1978; Hise and McNeal 1988; Raper 1989; Johnsson 1998; Falkman 2001a, 2001b; Piazza 2009).

2.3.1 Organizational Structures

The three most popular organizational structures or configurations used by corporations for their packaging decision-making functions are specialists, committees, and departments (Bardi and Kelly 1974; Leonard 1977; Raper 1987). Each organizational structure has advantages and disadvantages for the enterprise. The selected organizational structure roughly correlates to the enterprise's packaging needs (Deming 1962).

Small enterprises that make infrequent packaging decisions use simple packaging commonly utilize a packaging specialist. Depending on the amount of work, this could even be a portion of a single employee's work responsibilities. While comparatively inexpensive, the use of packaging specialists can present workload capacity and constraint issues.

Organizations select departmental structures for their PDMs in order to handle large, diverse, and complex packaging design challenges. For example, automotive companies would not intuitively seem to need large packaging departments because finished automobiles require minimal packaging. Yet automotive packaging departments often exists due to the vast array of automotive components requiring packaging designs for shipment to assembly lines as well as repairs performed at service centers. But the very existence of a packaging function structured as a department can lead to the "almost inevitable power struggles between department heads" that seek information and resources outside their own departments (Barlow 1969, 17).

In between the two ends of the PDMs' structural spectrum are packaging committees or teams. The composition of packaging committees is as diverse as the manufacturers of packaged goods. The literature that describes packaging committees commonly mentions representatives or department heads from corporate functions such as marketing, operations,

distribution, and purchasing (Leonard 1977). Packaging committees can ensure cross-functional buy-in for packaging decisions (Sensbach 2001). But committee-based packaging decisions can also be slow, biased, compromises, suboptimal, and costly (Raphael and Olsson 1976).

An alternative to organizationally structured PDMs is the out-sourcing of packaging decisions. Methods for corporations to externally make packaging decisions include the use of suppliers, consultants, and contract packagers (Hanlon 1971; Briston and Neill 1972; Leonard 1977; Fiedler 2002). These methods reflect specialized or non-recurring packaging decisions that do not necessarily justify internal organization solutions. A disadvantage of external PDMs is the organization's loss of direct control over packaging decisions that can create risks for corporations.

2.3.2 Organizational Responsibilities

Despite the variety of organizational structures, PDMs are often organizationally responsible for satisfying the same core corporate functions. The literature most frequently identifies marketing, operations, distribution, and purchasing as the enterprise functions commonly supported through packaging decisions (Leonard 1977). Less commonly, PDMs' organizational responsibilities include product development, research and development (R&D), industrial engineering, graphics, legal, and quality functions (Falkman 2001a). These organizational responsibilities often manifest themselves as various elements within packaging decision criteria (Briston and Neill 1972). For example, if a corporation's marketing function is part of the PDM's responsibilities, packaging decision criteria may evaluate the cost and benefits of different anti-counterfeiting or product-authenticating features such as holograms.

Here the PDM fulfills the marketing function's packaging need to protect the organization's brand reputation.

Another distinguishing characteristic of PDMs is the weightings or proportional considerations given to each supported organizational function in formal packaging decision criteria. For example, the packaging decision criteria for repair parts packaging may deemphasize the marketing function's need for advertising in favor of the purchasing function's need to keep packaging material costs low.

While packaging design emphases vary among companies, they are often similar within industries. For example, the consumer goods industry has packaging that performs certain retail-related functions such as brand recognition. This typically equates to the corporate marketing function being the lead decision driver for consumer goods PDMs (Hise and McNeal 1988). Industrial goods manufacturers are typically more concerned with packaging that fulfill logistical packaging requirements (Bardi and Kelly 1974). This typically means the corporate logistics function is an important decision driver for industrial goods PDMs.

EOP can result from a design process that balances all of the appropriate organizational functions' needs; unfortunately, these various packaging requirements can easily conflict (Lansdale 1978). For example, packages designed to maximize product protection may be more difficult to handle due to specific packaging orientation requirements that can reduce logistical efficiencies (Johnsson 1998). The conflicting packaging preferences of different organizational functions can create a working environment of organizational conflict for PDMs.

The literature contains numerous appeals for organizations to emphasize select organizational functions' packaging needs over others. Such recommendations describe

business advantages gained by leveraging specific packaging features and influencing PDMs. Generally, early literature most frequently cites the marketing function as the primary corporate beneficiary of incremental attention to packaging (Nickels and Jolson 1976; Baker 1963; Lippincott and Margulies 1956). More recent literature recommends logistical and supply chain functions would benefit most from incremental attention to packaging (Johnsson 1998; Mason, Batemen, and Wood 2004; Klevås 2005; Rundh 2005; GarcÌa-Arca and Prado 2008; Waller, Tangari, and Williams 2008; Vernuccio, Cozzolino, and Michelini 2010). These differing perspectives may correlate with emerging business trends such as consumerism in the '60s and supply chain management in the '80s.

Some authors also recommend realignment of PDMs' organizational accountability within select corporate functions. While most recommendations present persuasive rationale, few address the potential for adverse consequences to other business functions or the enterprise as a whole (Deming 1962; Guss 1967; Barlow 1969; Bardi and Kelly 1974; Lansdale 1978).

2.3.3 Organizational Accountability

Regardless of the PDM's organizational structure (i.e. specialist, committee, team, external resource, stand-alone department, etc.) or the PDM's organizational responsibilities (i.e. marketing, operations, distribution, purchasing, etc.), the PDM's organizational accountability can be a key determinant in packaging decisions. Organizational accountability of PDMs is very diverse and can be defined in several ways.

One way that a PDM's organizational accountability can be defined is by its reporting alignment. PDMs can be stand-alone organizational functions or they can be aligned within a

specific organizational function. The former scenario suggests an independent accountability where the PDM is empowered to produce enterprise-optimal packaging decisions based on organizational inputs rather than organizational alignment (Lansdale 1978). The latter scenario suggests a dependent accountability where the PDM may not be fully empowered due to its organizational reporting alignment.

A PDM that is directly accountable to a single organizational function is organizationally integrated or embedded. These scenarios can imply several potential things regarding the organization's perception of its packaging function. The first implication is that packaging is more important to one particular organizational function than all others. For example, packaging is regularly described as being crucial to product development functions (Sonneveld 2000; Bramklev 2003; Gofman, Moskowitz, and Mets 2010), industrial engineering functions (Ebmeyer 1979), or purchasing functions (Rudin 1986). Here corporations may be attempting to ensure that packaging decisions benefit the organizational function that is perceived to gain the most value from packaging decisions.

Another possible explanation for an organizationally integrated PDM is that the organization does not place a high value on its packaging. Consequently the organization does not empower its PDM with autonomous authority (Bardi and Kelly 1974).

The third potential explanation for an integrated PDM is simply organizational history. Briston and Neill (1972, 19) suggest that a PDM's "relative position owes [more] to history than to logic." Furthermore, they conclude that because of this the PDM is "often not situated best."

The literature contains numerous recommendations for embedding PDMs within specific organizational functions, but these appear to be focused on select short-term benefits

rather than holistic opportunities for corporations. Conspicuous by its scarcity in the literature is the concept of organizational risk resulting from integrated PDMs. The creation of EOP requires a decision-making process that takes into account all of the enterprise's needs and provides proper balance (Lansdale 1978). If a PDM is *responsible* for supporting several organizational functions with its decisions, but it is directly *accountable* to one, then suboptimal packaging is more likely to result (Guss 1967). Regarding the risk from organizationally integrated PDMs, Sutman (1979, 17) states, "If the packaging function is made subordinate to another group, corporate management may be denied the opportunity of being exposed to the best efforts of its packaging development professionals."

The existing literature less commonly describes independently accountable PDMs. Here it is generally assumed that this organizational accountability ensures the creation of EOP. Regarding the benefits of an independent PDM, Sutman (1979, 17) poignantly adds, "Only the freedom of expression and performance afforded by this reporting structure can yield truly innovative designs which are not forced into conformance with non-professional packaging personnel's more narrow concepts of 'proper' packaging." Very little literature exists that describes how organizationally autonomous PDMs could be negatively influenced and subsequently produce suboptimal packaging.

2.3.4 Organizational Reporting Levels

Another way that corporate PDMs are organizational defined is by their hierarchical reporting level within the organization. The literature indicates that there is a general correlation between PDMs' organizational reporting levels and the overall value that corporations place on packaging and packaging decisions (Deming 1962; Leonard 1977;

Fernandes 1978). Enterprises that place a high value on packaging more frequently make the PDMs accountable to higher levels in the organization's hierarchy. This does not mean that corporations who hold their packaging in high regard always have packaging executives or departments who are directly accountable to executives. The PDM's organizational level is only a preliminary indicator of an organization's perceived value of its packaging.

Regarding the relationship between PDMs' organizational reporting levels and structures, the literature includes examples of PDMs' various organizational structures and reporting levels in different combinations (Bardi and Kelly 1974; Raphael and Olsson 1976; Leonard 1977). For example, an individual packaging specialist may reside within a specific corporate function while an individual director of packaging may report to corporate executives. Packaging committees may consist of cross-functional representatives or the higher-level managers of various organizational functions. Formal packaging departments may be integrated within other organizational functions or they may report directly to executives. This further affirms that a PDM's organizational level is only a preliminary indicator of the organization's perceived value of its packaging.

2.3.5 Organizational Relationships

There are other organization-based influences beyond PDMs' organizational structures, responsibilities, accountability, and reporting levels that are less frequently found in literature. These include internal pressures that are rooted in interpersonal relationships and may not be obvious from organizational lines of accountability (Moyer 2002). Interpersonal relationships within organizations can be beneficial and positively influence packaging decisions, while others can be detrimental and negatively influence packaging decisions. Organizations can minimize

the potential for detrimental interpersonal influences by manipulating PDMs' organizational structures and reporting levels.

Regarding PDMs' organizational structure, cross-functional packaging committees can have checks and balances that minimize negative relationship-based influences. This enables the creation of packaging designs that better suit the enterprise as a whole. While this structure seems advantageous for enterprise-balanced packaging decisions, this may not compensate for the previously described disadvantages of packaging committees.

Regarding PDMs' organizational reporting levels, Babb (2011) noted an emerging trend of PDMs who are now reporting to corporate executives. This is being done to ensure packaging decisions are optimal for the enterprise and undue organizational influences are neutralized or inhibited. Beyond manipulating corporate PDMs' organizational structures and reporting levels, there are few examples in literature describing how potentially unfavorable relationship-based influences are monitored or proactively inhibited.

A substantial portion of the recent literature proposes that packaging decision-making be strategically integrated without necessarily being organizationally integrated. The intention of strategically integrated packaging decision-making is to better leverage the benefits of packaging for one or more specific organizational functions. For example, a company with an emerging need for improved logistics may need packaging decision-making to be better integrated with its warehouse and transportation departments compared to the existing PDM's organizational accountability or responsibilities. The exact means for PDMs to achieve this strategic integration is often not specified but the direct reorganizational embedding of PDMs in select functions is often implied. The potential risks of negative influences resulting from

organizationally embedding PDMs seem to undermine the benefits of strategically integrated PDMs.

Some literature refers to integrated packaging decision-making as holistic packaging management (Vernuccio, Cozzolino, and Michelini 2010). This implies that specific organizational packaging needs can be leveraged while still balancing the organization's entire packaging requirements. Again, any recommended mechanisms for achieving holistic versus integrated packaging management seem to carry the same risks if they include embedding PDMs within specific organizational functions.

Recommendations for integrated packaging decision-making are most commonly suggested for companies in consumer-based industries such as food and food service (Olsson, Petterson, and Jönson 2004; Rundh 2005). These do not necessarily recommend changes to PDMs' organizational accountability or responsibilities. Instead, these are essentially recommendations to modified packaging decision criteria by reweighting specific packaging requirements to emphasize new opportunities. For example, Svanes et al., suggests a methodology for sustainable packaging designs that consider indicators in five categories: environmental sustainability, distribution costs, product protection, market acceptance, and user friendliness (Svanes et al. 2010). Corporations that previously had not considered sustainability strategies would have to rebalance their packaging decision criteria. This would add environmental sustainability requirements to existing packaging decision criteria, such as distribution costs and product protection, and potentially giving them equal weighting.

While adjusting packaging decision criteria may avoid the upheavals associated with actual organizational changes, it does not ensure the design of better packaging for

corporations. Furthermore, if organizations frequently reemphasize different business needs, there is a risk of cyclic swings between prioritized elements of packaging decision criteria (Moyer 2002). This can also inhibit the creation of EOP.

The comparatively recent reemergence of integrated and holistic packaging management in literature coincides with emerging packaging-related business issues such as sustainability and brand protection. While businesses routinely pursue a profit-growing strategy through cost-reduction tactics, emerging packaging-related issues present corporations with innovation opportunities and improved competitiveness. In the case of sustainable packaging, corporations have new growth opportunities if environmental packaging strategies can be holistically developed and implemented. In the case of brand-protection packaging, corporations can maintain or improve their competitive position by strategically managing packaging. If emerging business issues increase corporate awareness of packaging's potential strategic value, then interest in packaging management will also increase.

2.4 Packaging Strategies

Harckham (1989, viii) observes, "There is a dearth of literature on packaging strategy." His observation is based on the distinction between *package strategy* and *packaging strategy*. He differentiates them by suggesting that *package strategy* is concerned with consumers but *packaging strategy* is "an overall plan which brings together all the packaging functions." Based on this distinction, the amount of literature on packaging strategy remains limited. Harckham (1989, viii) adds, "Most firms devote a fair amount of time to package strategies and little or none to packaging strategies, because they are unaware that a strategic packaging decision can

have a broader influence on their business." This confirms that PDMs can have strategic value for their corporations if they are organizationally enabled.

The likelihood of a PDM providing strategic value to the organization can be indicated by the PDM's organizational accountability. A PDM that is accountable to one organizational function may not be fully aware of other functions' packaging needs. Not only can these PDMs be challenged to make enterprise-balanced packaging decisions, they may not be organizationally empowered to make strategic packaging decisions. For example, a PDM that is integrated within and accountable to an organization's warehouse function may not be aware of the marketing function's strategic need for a sustainable corporate image that can be enhanced through sustainable packaging designs.

Packaging's strategic value is more likely to be realized when the PDM is more organizationally integrated (Lansdale 1978). Centralized decision-making also can better enable PDMs' strategic decision-making. Regarding decentralized decision-making, Horngren, Datar, and Foster (2006, 762) suggest that it "leads to suboptimal decision-making, which arises when a decision's benefit to one subunit is more than offset by the cost or loss of benefits to the organization as a whole." PDMs that are not strategically integrated or are organizationally decentralized can be challenged to fully assess, or even be empowered to act on, their corporations' strategic packaging needs. This describes how organizations may inadvertently inhibit the strategic value of packaging due to their PDM's organizational accountability.

PDMs' organizational responsibilities can indicate how likely or effective strategic packaging decisions are for the organization. For example, a PDM that is responsible for the packaging needs of multiple organizational functions such as marketing, logistics, and

purchasing is organizationally integrated and potentially strategically integrated. Assessing the organization-wide impact of a new strategic packaging need, such as sustainable packaging, appears more plausible for PDMs having broad organizational responsibilities.

Packaging decision criteria can provide evidence of a PDM's organizational integration and its ability to provide strategic value to the corporation. For example, existing research on sustainable packaging includes recommendations for fully integrated packaging decision criteria that include the "three Ps" of sustainability: people, planet and profits (Svanes et al. 2010; Lewis, Verghese, and Fitzpatrick 2010).

Other contemporary and emerging business trends such as globalization have created interest in the strategic value of packaging for organizations (Calantone et al. 2004). It should be expected that as business trends and packaging innovations continue to emerge and intersect, corporate interest in packaging strategies will increase.

While the literature frequently acknowledges the strategic value that packaging can have to a corporation, a generalized means of organizationally managing packaging remains illusive. The literature does not indicate a generalizable method for organizations to optimize their packaging. This suggests that many organizations struggle to strategically manage packaging in response to recurring product innovation, evolving packaging science, and emerging corporate strategies. It appears that at least part of these shortcomings is rooted in organizational behavior.

2.5 Types of Packaging and Corporate Risks

PDMs can produce packaging designs that have various corporate risks or benefits including optimal, suboptimal, and dysfunctional packaging types. The following sections describe each type and their ramifications for corporations.

2.5.1 Enterprise Optimal Packaging

Corporate PDMs can be challenged to make decisions that simultaneously satisfy several organizational functions due to the various functions' diverse packaging requirements (Barlow 1969). The challenge often occurs when organizational functions' packaging needs conflict with each other (Lippincott and Margulies 1956). Organizational conflicts require fact-based decision-making to resolve conflicts, minimize conflicts, or at least explain the organizational consequences of packaging decisions to corporate stakeholders.

Even if a PDM is fully aware of all of the organization's packaging needs, a *perfect* packaging solution that fully satisfies all functions is problematic (Barlow 1969). This gives rise to the concept of enterprise optimal packaging. EOP should not be considered the *perfect* packaging solution; instead, EOP satisfies all corporate packaging needs *as best as possible*. In order to create EOP, several things are organizationally required of and for PDMs.

The first requirement for EOP decision-making is that PDMs have *all* of the information necessary to make a decision. Information gathering should not inhibit the decision-making process or create "analysis paralysis" (Gladwell 2005). For this reason, *all* is defined as the relevant and pertinent data required to make a comprehensive packaging decision on behalf of the entire enterprise. For PDMs that utilize packaging cost models, relevant and pertinent data includes the financial consequences of selecting one packaging option over another (Prasert

1982). For example, the size selection of a corrugated carton can influence material costs, palletization material and labor costs, warehousing space and labor costs, and transportation costs. A comprehensive cost model includes all of these factors as they directly impact the cost performance of various corporate functions such as purchasing, operations, warehousing, and logistics, respectively.

EOP decision-making also requires PDMs to properly balance potentially competing organizational packaging needs (Guss 1967). Ideally this balance reflects the enterprise's priorities and strategies. For PDMs that utilize packaging cost models, this can be the *weighting* of different function's data. For example, an enterprise's strategic need to add anti-counterfeit packaging features can *outweigh* incremental material costs based on estimated economic benefit the corporation. In this scenario, the cost is less consequential compared to the organization's return on investment (ROI).

The creation of EOP requires the PDM to be organizationally empowered to make packaging decisions on behalf of the entire enterprise (Leonard 1977). Here organizational behavior can enable or inhibit the PDM's ability to make EOP decisions. For example, the PDM's organizational accountability and reporting level can significantly influence the PDM's authority for creating EOP.

Existing literature and research has not produced a generalizable theory on how corporations should manage packaging to create EOP. This seems to result from the diverse packaging needs of industries, corporations, and even different products within an organization. The foundation of existing knowledge is built on case studies of corporations, surveys of professionals, and testimonials based on experience. While many sources assert that

packaging has value, or potential value, for organizations (Guss 1967; Brody 1972; Johnsson 1998; Moyer 2002). Some affirm the need for better organizational management of PDMs while others recommend that PDMs must be integral to corporate strategies if packaging is to be fully leveraged for competitive advantage. The consequences for corporate inattentiveness to packaging decision-making include tangible risks and less tangible lost opportunity risks.

2.5.2 Corporate Risks: Suboptimal Packaging

Suboptimal packaging can result from packaging decision criteria that omits or misrepresent any of the enterprise's various packaging needs (Willis 1975). Suboptimal packaging creates opportunity costs for the organization (Horngren, Datar, and Foster 2006). For example, the cost of fixing avoidable packaging-based problems can be better invested in new product development. This opportunity can yield better financial returns than the cost to redesign suboptimal packaging.

Opportunity risks for some organizational functions that result from suboptimal packaging types may not be obvious. For example, marketing and sales functions can lose the opportunity to gain market share if packages are printed with inks that appear less expensive and do not convey the brand's image of luxury. Operations functions can experience downtime on production lines due to a new appearance-enhancing packaging material that is less compatible with integrated packaging equipment. Procurement functions can fall short of economic order quantities because packaging decisions may not consider the potential value of standardized packaging materials and sizes. Warehousing functions can incur re-palletizing labor costs due to stretch-wrapping material specifications that inadequately capture performance requirements of warehouse handling equipment. Logistics functions can incur

avoidable inefficiencies due to pallet quantities that maximize density without considering just-in-time replenishment quantities for distribution centers.

Packaging decision criteria that balance enterprise needs can proactively mitigate the risks for other less obvious organizational requirements such as legal, brand protection, and sustainability departments. For example, corporate counselors can avoid regulatory non-compliance penalties if packaging label decisions proactively incorporate regulated requirements. Brand Protection investigators can assist in the successful prosecution of product counterfeiters if package authentication features are cost-rationalized during decision-making processes. Sustainability officers can achieve best-in-class status ahead of competitors if strategic requirements for sustainable packaging are cross-functionally developed.

2.5.3 Corporate Risks: Dysfunctional Packaging

The consequences of dysfunctional packaging seem obvious when viewed from the consumer perspective (Mason, Batemen, and Wood 2004). Damaged goods negatively impact brand reputation and consumer loyalty. This can reduce profit margins immediately and potentially long after the failed packaging experience.

Beyond the consumer perspective, damaged goods increase corporate costs of processing returned goods and damage claims as well as a variety of replacement costs assuming consumers want to replace their damaged goods (Goddard and Paine 1976). In the simplest scenario a replacement product is taken out of standing inventory but even this act incremental costs that are incurred towards securing the margin from the original sale.

Corporate losses from dysfunctional packaging can be less obvious when traced back into the supply chain and can occur at any point in the value chain (Mason, Batemen, and

Wood 2004). Incremental costs can include inadequately protected raw materials or components, packaging line scrap, warehouse inventory shrinkage, and carrier damage claims. Product replacement cost includes variable costs such as incremental material cost, manufacturing labor cost, transportation cost, and inventory fluctuations. Product replacement costs can even impact fixed costs such as packaging equipment, warehousing, transportation fleet, and overhead expenses. Although fixed costs do not vary based on product volume, replacing damaged products can unexpectedly accelerate equipment life and unexpectedly over consume warehouse and transportation fleet capacities (Horngren, Datar, and Foster 2006).

With the advent of supply chain science, inventory fluctuation caused by dysfunctional packaging has been shown to have several negative consequences (Bowersox and Closs 1996). Replacing damaged goods or damaged work-in-process (WIP) hastens inventory consumption. This increases the risk of *stock out* conditions that can further erode consumer satisfaction. An inventory management system may misinterpret this accelerated consumption as consumer incremental demand. This can lead to unnecessary inventory replenishment and safety stock that further increase inventory-carrying costs. Ultimately the enterprise's cost of capital can also increase due to dysfunctional packaging.

2.5.4 Other Risks

Suboptimal and dysfunctional package designs can have negative consequences for society and the environment. For example, the unnecessary consumption of natural resources and energy in manufacturers' value chains is simply wasteful. But simple corporate awareness does not always ensure corporate growth and improved social welfare (Porter and Kramer

2006). A comprehensive approach to developing sustainability strategies can better assure corporate growth and social welfare (Porter and Linde 1995). Corporations that already have, or want to create, sustainability objectives as part of their competitive strategies or brand marketing cannot afford to be inattentive to its packaging decision-making processes (Lockamy 1995).

A holistic approach assesses all of a company's packaging needs in order to better leverage a corporate sustainability strategy. Porter (2006, 86) adapted his acclaimed value chain model "for mapping the social impact of a company's value chain." With it he specifically notes that corporations' outbound logistics packaging as potentially impacting society and the environment. For example, if a company assesses its outbound logistics with respect to sustainability, it can develop strategies contingent on its packaging. Regardless of where packaging is used within a corporate supply chain, it has the potential to be part of a successful corporate strategy for sustainability (Handfield et al. 2002).

There are intangible risks to corporations due to poor packaging management that negatively influence organizations' PDMs. For example, suboptimal and dysfunctional packaging designs reflect poorly on packaging professionals. Subsequently this can lead to employee moral issues and in turn disincentivizes PDMs' future creativity and contributions to the organization. This is organizational risk has been rarely explored.

2.6 Enterprise Risk Management

Business cycles are marked by periods of expansion and contraction that create organizational change and can introduce packaging-related risks. These successive changes can cause individual corporate functions to pursue their own short-term objectives at the expense

of the enterprise's long-term needs. This has been demonstrated by influences on packaging decisions that create enterprise risks. For example, despite the current economic downturn, corporate interest in sustainability and sustainable packaging continues to grow (Closs, Speier, and Meacham 2011). But the continued interest may no longer be exclusively due to corporations' environmentalism and due in part to the potential to simply reduce packaging materials and their costs (Babb 2011). It is not clear how frequently the corporate pursuit of sustainability objectives actually leads to dysfunctional packaging, but for corporate functions such as procurement, such risks may seem more acceptable during economic downturns.

While corporate risks due to dysfunctional or suboptimal packaging designs may not justify the existence of a Chief Risk Officer, packaging decision-making can be worthy of integrating within existing enterprise risk management systems (Sparkes 1993). The research of influences from organizational behavior on packaging decision-making can contribute unique knowledge to the field of enterprise risk management.

2.7 Summary of Existing Packaging Management Literature and Research

Previous case study research of select corporations and industries has documented PDMs' organizational responsibilities and accountability. Featured organizations have been shown to rationalize their organizational behavior based on their perceived business needs regarding packaging. The research commonly implies that a superior method of packaging management has been found and occasionally recommends its universal application to other organizations. But successful generalizations have not been documented in the literature or in practice.

Previous survey research of packaging professionals has produced a rich amount of longitudinal data regarding PDMs' responsibilities and accountability (Deming 1962; Guss 1967; Bardi and Kelly 1974; McGinnis and Hollon 1978; Raper 1989; Falkman 2001a; Peters 2011). Surveys invariably studied PDMs' accountability and responsibilities but do not indicate a dominant method to optimally manage packaging.

The literature indicates that PDMs have been organizationally accountable to a broad variety of organizational functions and this diversity is consistent over time. It appears that PDMs have been accountable to almost all organizational functions yet a clear universally applicable favorite has not emerged. To further complicate the assortment of PDM accountability scenarios, organizational reporting hierarchies are dynamic and often intertwine with PDMs' organizational accountability. Both are subject to change depending on corporate-driven realignments and changing management perceptions. This organizational churn can produce inconsistent packaging objectives and strategies that directly influence packaging decision-making criteria.

The literature indicates that PDMs' organizational responsibilities have supported a broad variety of organizational functions and this diversity is consistent over time. The periodic emergence of business issues or packaging innovations have only produced punctuated interests in PDMs' organizational responsibilities. Again, a dominant set of prioritized PDM responsibilities has not emerged.

The recent emerging interest in PDMs' organizational responsibilities is commonly referred to as integration, as it applies to corporate strategies. Unfortunately the recommendations for strategically integrated packaging decision-making are not consistently

holistic and often recommend that PDMs emphasize one organizational responsibility over others. In these cases, *strategic integration* does not necessarily ensure that PDMs' are *organizationally integrated* and, as such, are at risk of being negatively influenced by organizational behaviors such as accountability.

Given the historical span of existing literature, it appears that packaging management issues have persisted for decades and proposed solutions or recommendations are generally not universal. Generalizations about packaging management are problematic at best. Deming (1962, 17) suggests, "it is not only difficult, but dangerous, to generalize in this area." He adds, "There is no firmly established norm of packaging organization." Regarding unique organizational solutions for packaging management, Barlow (1969, 16) observes, "there is no one, perfect, foolproof method for handling the packaging effort." Fernandes (1978, 15) explains, "there is no universally accepted organizational reporting structure; there is no model departmental organization chart; there is no definite list of responsibilities."

2.8 Introduction to Organizational Behavior

The first portion of this chapter chronicled the persistence of corporate management issues regarding the packaging function. It concluded that solutions are not simple, comprehensive, or universal. It showed how packaging management and organizations have changed over the past fifty years in response to changing business conditions and packaging innovations. This chapter continues by exploring organizational behavior theories and some current business models that provide further insight to packaging management.

2.10 Organizational Behavior Theories and Perspectives

Many organizational theories seek to explain why some organizations are more successful than others (Harvey and Buckley 2010). This assumes that by applying behavioral knowledge an organization can be more successful. While organizational theories are conceptually applicable to all types of organizations, organizational management has become a mainstay of thought in the business world where the need for competitive advantage is ever present. The following describes several popular business-related organizational theories that relate to the theoretical development of the research.

One widely recognized organizational behavior theory is Contingency Theory (Freeman 2005). By the early '70s this theory had emerged to suggest that organizational performance was directly contingent on environmental factors such as technology and markets. This perspective suggested that organizational leaders could only reactively adapt their organizations to changing environments in an attempt to be successful. Furthermore, Contingency Theory suggested that the external environments would selectively determine which organizations would succeed and which would be less successful. While Contingency Theory stressed that organizational performance and success were contingent on environmental influences, other theories emerged that emphasized the strategic selection of environments.

Strategic Choice was proposed as a corrective to the deterministic organizational theories of the early '70s (Child 1972). Strategic Choice supposed that corporate leaders could proactively choose strategies to ensure business performance and ultimately success. It assumed that organizational leaders who assessed their organizations' strengths with respect

to desired performance would choose a proper strategy for their organization. While Contingency Theory emphasized causal factors for organizational performance, Strategic Choice emphasized the necessity for organizational strategy.

Coincidentally other new theories emerged drawing attention to the value of organizational structure. The Strategy, Structure, and Performance (SSP) paradigm explored the causal relationships between organizations' strategy, structure, and their performance (Galunic and Eisenhardt 1994). SSP supposed that with adequate information, business leaders would formulate competitive strategies for their organizations. This in turn determined what type of structure(s) their organization would implement to achieve the desired performance. SSP integrates Contingency Theory's emphasis on environments and Strategic Choice's focus on strategy. It also extends these foci into organizational structures and performance.

An example of the SSP paradigm applied is a business that wants to expand internationally. Based on available information, executives might strategically choose to replicate its domestic successes in a new offshore market. It might then choose to replicate its domestic organizational structure by creating a new overseas division. The resulting performance of this new strategic business unit is contingent on the organization's strategy as well as its fit within the new environment. Here SSP accounts for the organization's environment all the way through to its performance.

Contingency Theory, Strategic Choice, and SSP are also applicable to the study of corporate packaging decision-making. For example, from a Contingency Theory perspective, an *ideal* organizational construct for managing packaging does not exist because of the complexity and dynamic nature of an organization's environment. This has been more or less confirmed

based on the existing literature and research on packaging management. The literature suggests that an ideal PDM configuration is not universally applicable.

Strategic Choice is also applicable to managing packaging decisions. In 1997, Child critiqued the shortcomings of how his paradigm after some of its applications in organizational studies. Child (1997, 285) recalls, “Strategic choice drew attention to the active role of leading groups who had the power to influence the structures of their organizations through an essentially political process.” He noted that personal perspectives and biases influence the human actors making strategic decisions. Similarly, the human actors that manage PDMs are not necessarily behaving based on facts or logic. Existing packaging management literature notes that organizational choices regarding PDMs are sometimes subjective and even based on habit (Deming 1962).

SSP is also applicable to managing packaging decisions. The SSP paradigm’s authors also critiqued the shortcomings of how SSP had been applied in organizational studies over time (Galunic and Eisenhardt 1994). One of their criticisms was the assumption of static equilibrium. (Child’s also noted this specific criticism of Strategic Choice.) Unlike Contingency Theory, researchers using both SSP and Strategic Choice did not adequately acknowledge the dynamic nature of organizations and their environments. The need for organizations to routinely reevaluate the management of their packaging decisions with respect to organizational strategies, structures, and performance is also part of existing packaging management literature.

Organizational theories can differ in their *perspectives* of organizational behavior. Ott (1989, 4) states “behavior is considered organizational if something associated with the

organization causes or enhances the behavior, the behavior results from an organizational activity or function, or organizational meaning is attached to the behavior." It is this broad range of behaviors that has given rise to the variety of perspectives addressing motivation, leadership, decision-making, systems, bureaucracy, and sociological influences (Miner 2007).

Ott suggests that organizational behavior has two different meanings. These are "the actual behavior of individuals and groups in and around purposeful organizations" and "one of several frameworks or perspectives on what makes an organization work." (1989, 1-2) The former has a human focus and the latter an organizational focus. These two foci give rise to two important organizational behavior perspectives, *relationships* and *structure*, respectively.

The relationship-based perspective of organizational behavior focuses on employees, their relationships within the organization, and the company-employee fit. This perspective studies human needs and motivations in the context of the work environment. The perspective provides an optimistic assumption that employee happiness ultimately benefits the organization.

The structural perspective of organizational behavior focuses on organizational constructs. The structural perspective suggests that organizational performance improves by manipulating the organization and its structure. This includes employee work environments

In 1984, Bolman and Deal suggested a modern structural school or perspective for studying organizational behavior now commonly called framing or Frame Theory (Bolman and Deal 1984). They created two observational frames, a Human Resource Frame and a Systems and Structural Frame, that enabled simultaneous relationship-based and structure-based perspectives for studying organizational behavior. For example, they suggest that organizations

are not simply structural but are *rational*. This imprints human characteristics onto the organization by virtue of its human components. This duality of perspectives expanded on traditional structure-based perspectives of organizational behavior by adding relationship-based perspectives. Framing has application for the study of packaging management because packaging decisions are made by human actors in the context of their organizational structure.

While there are dozens of organizational behavior theories that have evolved within the last hundred years, two were chosen for the theoretical framework of the research. Porter's Value Chain Model provides a structural perspective of how organizations manage their packaging functions (Porter 1985). Bolman and Deal's Framing Theory provides multiple relationship-based perspectives of how PDMs interrelate to their organizations including interpersonal relationships (Bolman and Deal 2008). In combination, they augment the deeper study of organizational behavior influences on PDMs.

2.11 Value Chain Modeling

Value chain models (VCMs) provide a perspective of several structure-based organizational behaviors such as accountability and responsibilities. Corporate value chains are distinctly different than supply chains and, because the two can overlap each other, a clear definition must be given for both. In the context of this research, value chain and supply chain definitions use cost accounting definitions (Horngren, Datar, and Foster 2006).

A value chain is "the sequence of business functions in which customer usefulness is added to products or services"(Horngren, Datar, and Foster 2006, 4). A value chain is internal to an organization and is comprised of different business functions. Although there is a sequential nature to the different business functions that add product value, the planning and managing of

those functions does not need to occur sequentially. Corporations are more competitive when they concurrently plan and manage multiple functions, for example, through the firm's infrastructure or other supporting activities such as the human resources function.

A supply chain is more broadly defined in composition and scope than a value chain. A supply chain is "the flow of goods, services, and information from the initial sources of materials and services to delivery of products to consumers, regardless of whether those activities occur in the same organization or in other organizations"(Horngren, Datar, and Foster 2006, 5). Goods, services, and information are included beyond a corporation's simple value-adding functions. Supply chains include entities that are external to the organization such as upstream suppliers and the interfaces with end consumers. Although a supply chain is broader than an organization's value chain, this research uses Porter's generic VCM to provide a perspective of structural behaviors that influence packaging decisions.

Porter (1985) uses the analogy of a chain to illustrate the sequence and connectivity of different organizational functions. Organizations are much more than a series of *primary activities* working sequentially to add product value. They also have *supporting activities* that transcend the linear value chain by providing support to the enterprise's primary value-adding activities. Although supporting activities are interdependent or primary activities but they have goal congruence to build value for consumers and produce profit for the enterprise. Competitive advantage occurs when organizations successfully link strategy formulation with implementation.

Primary and supporting activities are also referred to as line and staff activities respectively. Line activities directly work toward organizational objectives such as productivity

targets, whereas staff activities exist only to support line activities. For example, a company's human resources department is a supporting activity that ensures the manufacturing activity is properly staffed in order to reach corporate productivity objectives. Although this delineation typically works well when analyzing organizational activities, it can be problematic to categorize PDMs because organizations have historically configured them as both primary and supporting activities.

Porter's Generic Value Chain Model illustrates the interdependencies of corporations' primary and supporting activities (Figure 2).[4] In two dimensions it visually accounts for the interplay among primary activities and supporting activities.

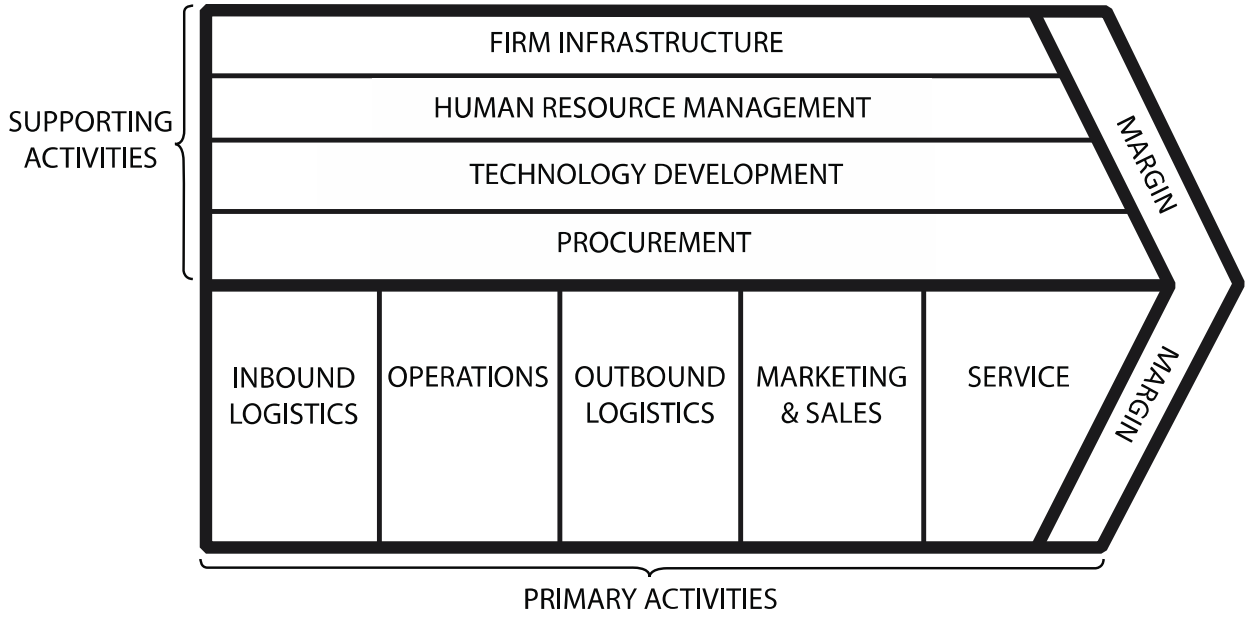

Figure 2. Generic Value Chain Model (Porter, 1985) Reprinted with permission

Vertical columns (bottom half of Figure 2) represent a firm's five generic primary activities as defined by Porter: inbound logistics, operations, outbound logistics, marketing and

[4] Porter specifically acknowledges his predecessors' works in defining the concept of business systems. (Porter 1985, 36)

sales, and service. These activities are arranged in linear fashion to reflect the corporate sequence of value-adding events.

The organization's support activities are represented by horizontal rows (top half of Figure 2) that span the primary activities' columns indicating their support of specific primary activities. While Porter considers support activities to be more industry-specific than primary activities, he recommends value chain analyses specifically consider the supporting activities of: procurement, technology development, and human resource management.

At the top of the model is the firm's infrastructure indicating its control of all primary and supporting activities. Example components of a firm's infrastructure include: general management, planning, finance, accounting, legal, and government affairs. Ultimately all of the organization's primary activities, supporting activities, and infrastructure add value that culminates in profit, as represented by the arrowhead labeled as *margin*.

The VCM has analytical application to any level of the organization from organization-wide strategies to sub-activity processes. The model can be adapted to include or delete primary and supporting activities based on the case study of specific organizations. Subunits can also be added to the model to better define activities' responsibilities, such as an embedded PDM.

2.11.1 Packaging in Value Chains

Value chain modeling provides the basis to explain how packaging value is added within a corporation. Sand (2010) noted that Porter's model can indicate the activities that packaging adds value to. Sand's Circular Value Chain Model illustrates the integration of packaging with corporation's value-adding activities with packaging interfaces at the model's core (Figure 3).

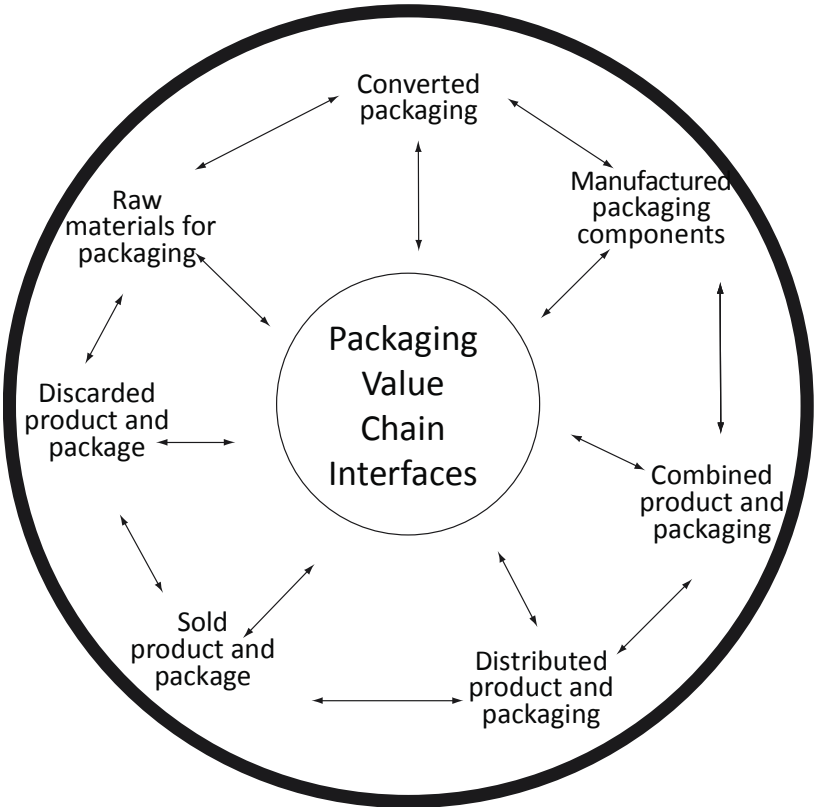

Figure 3. Circular Packaging Value Chain Model (Sand, 2010)

Sand's circular packaging value-chain accurately illustrates the activity-spanning nature of packaging value. While the model provides a theoretical framework for enabling corporations to conceptualize packaging's potential value throughout an entire value chain, it may be too packaging-centric for some enterprises. Some corporations are unaware of packaging's extensive potential value while other may not be comfortable with packaging as the focus of their value chain model.

Johnsson (1998) adapted Porter's generic VCM to create a theoretical framework for the integration of packaging with various corporate logistical needs. Johnsson substituted five functions of packaging (i.e. protection, ergonomics, distribution efficiency, environmental

efficiency, and information) for Porter's supporting activities. The model illustrates how all five of Porter's primary activities have unique logistical needs that can be fulfilled at least partially with packaging solutions. Johnsson's Packaging Logistics Value Model illustrates the integration of packaging decision-making with corporate logistical needs (Figure 4).

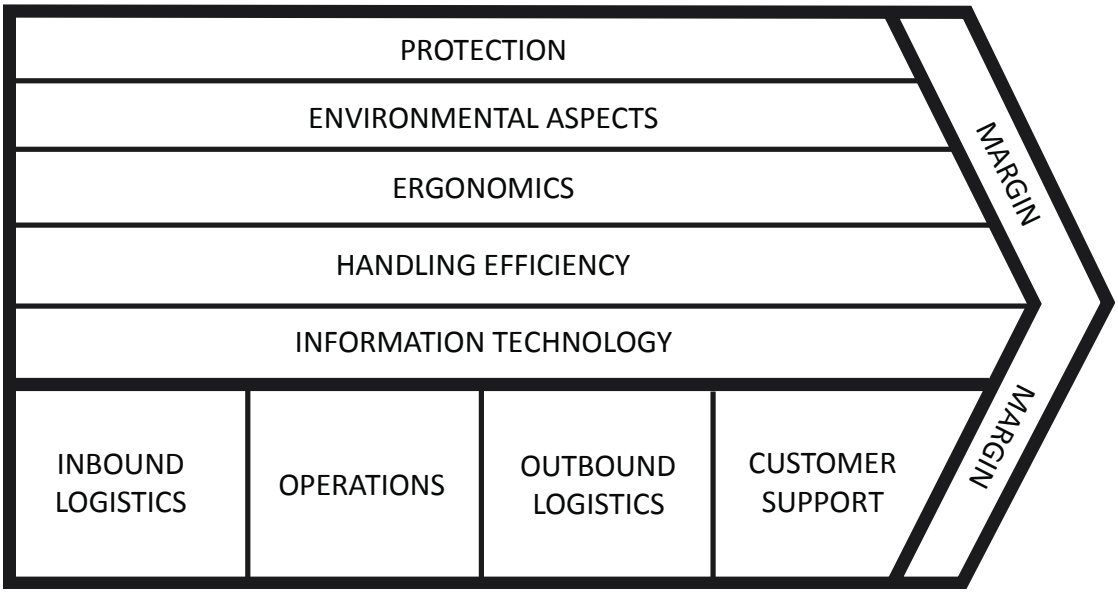

Figure 4. Packaging Logistics Value Model (Johnsson, 1998)

Johnsson's model accurately illustrates the activity-spanning nature of packaging as a support activity. While Johnsson's adaptation of Porter's model provides a theoretical framework that enables corporations to conceptualize integrated packaging decisions with logistical needs, it may be too logistics-centric for some corporations. This may be particularly true for organizations that want to integrate packaging decisions with specific activities, such as marketing and sales, or with all organizational functions in some manner. For example, Johnsson's model does not include marketing and sales as a primary activity. This indicates the potential for integrating packaging with logistical needs rather than marketing and sales needs.

These packaging-related adaptations of Porter's value chain theories confirm the applicability of value chain modeling for exploring the influences of organizational behavior on PDMs. The following sections describe specific PDM organizational characteristics from a VCM perspective.

2.11.1.1 Value Chain Modeling of PDM Attributes: Organizational Accountability

Value chain modeling can provide the perspective needed to explore several structure-based organizational behaviors and their influence on packaging decisions including a PDM's organizational *accountability*. A VCM can indicate *where* a corporate PDM is organizationally located, what activity the PDM is accountable to, and if the PDM is a primary or supporting activity. Being a primary versus supporting activity is an important distinction because, as previously mentioned, a corporation's packaging function can have the characteristics of both line or staff functions. The PDMs organizational accountability, as illustrated in a VCM, can signal potential influences on both their decision-making and their ability to design EOP. For example, corporations that have packaging operations as part of their line activities may have the PDM directly account to a primary activity such as *operations*. Alternatively, corporations that are focused on controlling material costs as part of their staff activities may have PDMs be directly accountable to supporting activities such as *procurement*. Given these two diverse PDM accountability scenarios, it is reasonable to expect that organizational accountability can influence packaging decisions.

If packaging decisions have risks and benefits for multiple organizational activities, a corporation may configure its PDM's accountability as a stand-alone supporting activity. For example, a durable goods manufacturer might configure its PDM as a supporting activity due to

the need for both finished goods and repair parts packaging. Such an organization may have an independent *packaging department* that can support a variety of primary and supporting activities. The VCM of this organization would include a new horizontal row to represent its packaging function (Figure 5).

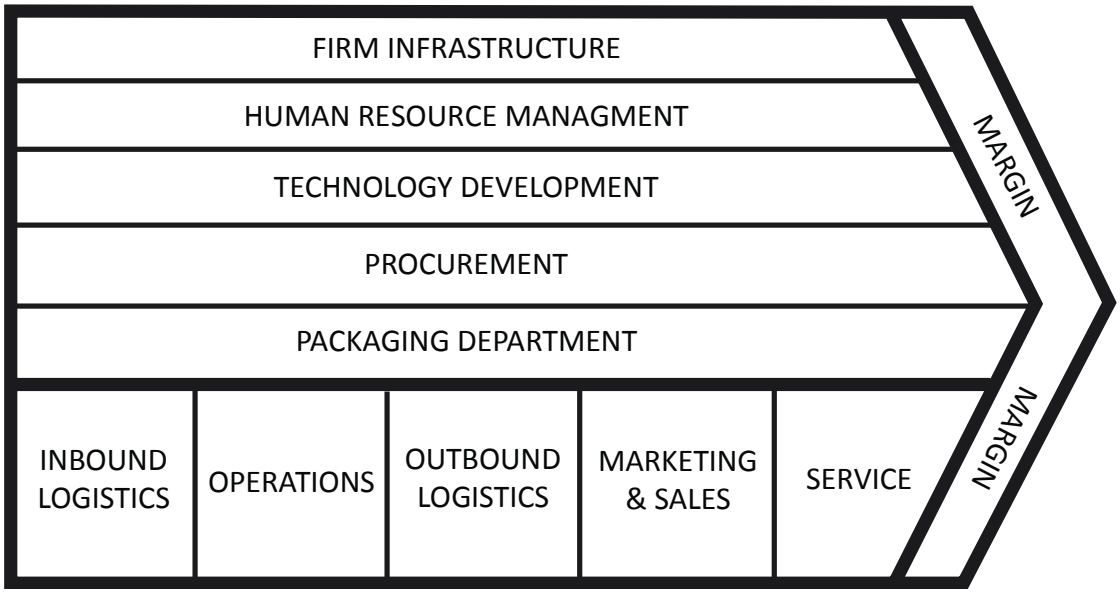

Figure 5. VCM: Packaging as a Supporting Activity (adapted from Porter, 1985)

An example of packaging as a stand-alone primary activity would be the corporation that values its packaging to the point of being synonymous with its end product such as food producers. Such organizations might have *packaging operations* as a stand-alone primary activity. The VCM of this organization would include a new vertical column to represent its packaging function (Figure 6).

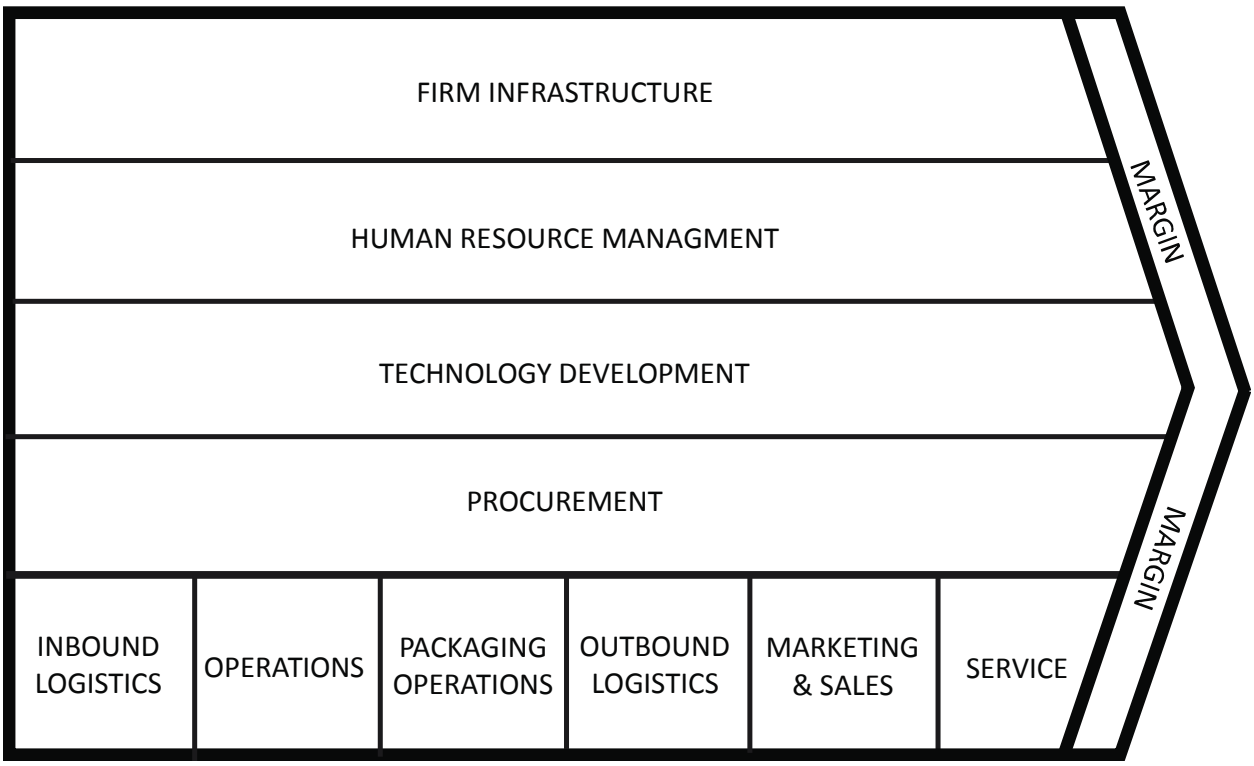

Figure 6. VCM: Packaging as a Primary Activity (adapted from Porter, 1985)

Value chain models can be used to identify a PDM's organizational accountability to a primary or a supporting activity as well as indicate if the PDM is a stand-alone or an integrated activity. The next organizational attribute that value chain modeling can provide insight to is a PDM's organizational responsibilities.

2.11.1.2 Value Chain Modeling of PDM Attributes: Organizational Responsibilities

Value chain modeling can indicate all of the corporate activities that a PDM is organizationally responsible for with packaging decisions. For example, a PDM that is integrated with procurement, a supporting activity, the PDM may be responsible for minimizing costs of several primary activities such as operations and outbound logistics. These itemized responsibilities for can be annotated in the VCM's horizontal row representing procurement. Annotated PDM responsibilities for operations could include: "Minimize disposal costs by

specifying returnable containers to the assembly line." Annotated PDM responsibilities for outbound logistics could include: "Minimize transportation expenses by maximizing packaged products' cube utilization of delivery trucks."

A VCM can also indicate the organizational responsibilities of a PDM that is a primary activity. For example, a stand-alone primary activity such as *packaging operations*, may have a PDM that is responsible for the labeling needs of other primary activities such as *outbound logistics* and *marketing & sales.* These responsibilities can be itemized in each primary activity's vertical column. PDM responsibilities for outbound logistics could include: "Design the print for tertiary containers that includes serialized data to track product shipments." PDM responsibilities for marketing & sales might include: "Design the print for primary containers that includes product expiry information for use by consumers."

These examples show how value chain modeling can be used to understand the breadth and scope of a PDM's organizational responsibilities and can provide insight to how organizational responsibilities can influence packaging decisions.

2.11.1.3 Value Chain Modeling and Other PDM Attributes

While value chain modeling is readily applicable to exploring structure-based organizational behaviors such as accountability and responsibilities, value chain modeling can provide insight to some organizational behaviors that are more relationship based. This includes PDMs' organizational structures and reporting levels. Various PDM organizational structures can be indicated through value chain modeling. An example of this is an individual *packaging specialist* that is integrated in a supporting activity such as procurement. The VCM indicates that the PDM is part of the procurement and is further described as an individual

specialist. If the PDM were a fully staffed department, the VCM would indicate the structural configuration of a PDM department. In this way VCMs not only capture PDMs' organizational structures but also further explore the potential influences due to their relationships within the organization.

Value chain modeling can be used to explore a PDM's organizational reporting level but with some limitations. Similar to PDM structures, VCMs can include a PDM's organizational reporting level by specifically annotating the hierarchical title of the highest ranking PDM. VCMs can only *imply* relative organizational importance of PDMs because job titles are not universal and VCMs are not constructed like pyramidal organization charts that convey organization hierarchies. For example, the model's illustration of a PDM in an overarching supporting activity does not necessarily indicate that the PDM reports to high-level management or executives. Conversely, PDMs in organizations that emphasize production operations may configure packaging as a primary activity but the PDM may actually have a reporting level that is close to upper management. Value chain modeling can contribute to exploring PDMs' inter-organizational and interpersonal relationships, but a VCM does not provide a thorough understanding of relationship-based organizational behaviors. For this type of additional insight, supplemental analytical tools such as perspective framing must be used.

Organizational change is another behavior that can significantly influence PDMs and can be studied by comparing different time-anchored VCMs. Value chain modeling of organizational change, in longitudinal fashion, provides insight to the potential influences that changed organizational behaviors have on PDMs. For example, the organizational realignment of a PDM from *procurement, a supporting activity,* to *outbound logistics, a primary activity,* can

significantly influence the PDM's ability to produce EOP. Comparing *before-and-after* VCMs can indicate which changed organizational behaviors influence PDMs and provide insight to the organization's approach to packaging strategies.

Modeling PDMs in value chains can effectively describe structure-based attributes and provide insight to other structure and relationship-based PDM attributes. The following sections describe how value chain modeling can be applied beyond finished goods and used to explore packaging decisions for assembly components and service parts.

2.11.2 Service Parts Value Chains

Value chain modeling can be used to explore different packaging-related value chains within the same organization. For example, original equipment manufacturers that produce durable goods may also produce *service parts* used to repair original equipment. The organizational behaviors for repair parts PDMs can be completely different than those of finished goods PDM. This is does not mean that primary or supporting activities are necessarily absent or incremental to the value chains of these two different products; but, it should be expected that at least some primary activities or sub-activities are different for service parts than for finished goods.

For example, an original equipment manufacturer's primary activity (i.e., operations) might simply divert a quantity of assembly components away from its assembly line (i.e. a sub-activity of operations) for the corporation's service parts needs. This activity-driven divergence in value chains is based on the different product types of the organization. Essentially these are two different value chains within the same organization. These two value chains can be

modeled independently and the potential organization-based influences on different PDMs can be compared.

The adaptation of value chain modeling to explore different products within the same organization can be particularly useful when distinctively different packages must be developed. The organization's packaging needs for serviceable repair parts may be distinctly different from those of finished goods. Here the unique PDM attributes established by organizational behavior become obvious and suggest further exploration.

The differences between service parts and finished goods VCMs are not limited to primary activities or their sub-activities. An organization's *supporting activities* may diverge and can be indicated with VCMs. For example in the case of service parts, a firm's infrastructure (i.e. management) may strategically require that service parts packaging include anti-counterfeiting features. Such packaging requirements could aid in the authentication of parts prior to authorized repairs and ensure the performance of repaired finished goods. This unique packaging requirement suggests that supporting activities in the service parts VCM may differ from the supporting activities indicated by the finished goods VCM. These differences may include the omission or addition of supporting activities and their sub-activities.

2.11.3 Assembly Components Value Chains

Another packaging-related value chain variation concerns the raw materials and assembly components that are required to produce finished goods. Assembly components enter the value chain through the primary activity *inbound logistics*. It is worth noting that supporting activities are involved including the procurement activity's acquisition of assembly components prior to their physical receipt.

Considering that assembly components are different than finished goods and service parts, they too can have unique packaging requirements. This uniqueness suggests that organizations may handle assembly components PDMs and packaging decision-making processes differently. For example, the packaging requirements of assembly components destined for assembly operations can be very detailed and specific because packaging designs may support handling efficiencies at the point of receipt or assembly. Supporting activities such as human resource management may champion ergonomics or workers' health and safety. The assembly components VCM can indicate these influences on packaging decisions.

The packaging requirements for an organization's assembly components, finished goods, and service parts may be distinctively different, therefore the research utilizes value chain modeling as a tool to observe and analyze the phenomena of organizational behavior influences on packaging decisions. VCMs for a company's different packaging needs can be the basis for comparing and contrasting these influences.

VCMs are not a comprehensive tool for exploring organizational behavior and the influences on corporate PDMs. The applicability of the model becomes more limited as organizational behaviors become less structure-based and more relationship-based. VCMs are valuable if a complimentary relationship-focused perspective is provided. The next section describes an additional organization behavior theory used to further explore the causes and effects of organizational behavior influences.

2.12 Framing Theory in Organizations

Deming (1962, 17) states, "Organization is people, and it is affected by innumerable variations of talent and skills." Given the organizational risks of making suboptimal packaging

decisions and the potential rewards of creating enterprise optimal packaging, the influences of organizational behavior on PDMs cannot be thoroughly understood through value chain modeling alone. Framing Theory provides the needed complimentary relationship-perspective for researching the phenomena.

Framing is a research method that predisposes observers to use prescribed schemata to interpret phenomena. Having predefined perspectives is particularly useful in the study of complex phenomena such as those encountered in the social sciences. Here human relationships, motivations, and interactions can be complex and intertwined. Framing can be a useful tool for quickly recognizing select behaviors and understanding them *in context*.

Framing Theory has applications for studying organizational behavior particularly with respect to the human actors commonly know as leaders and employees. The research uses framing perspectives to explore the relationships among PDM employees, their leaders, and other organizational entities. The research also explores how organizational leaders' management styles frame an entire organization and potentially influence packaging decision. Framing enables additional insight to relationship-rich influences such as PDMs' organizational reporting levels and structures. Lastly, Framing Theory is used to study how organizational change impacts PDM employees and their behavior.

2.12.1 Four Frame Model

Framing Theory has been used and adapted by researchers to explore and explain a broad variety of complex phenomena from education reform to executives' behavior. Framing allows researchers to observe phenomena simultaneously through different lenses. This aids in

recognizing phenomena in context. Cognitive framing allows researchers to categorize and code observed behaviors for analytical purposes.

Framing assists researchers with explanation building and to describe findings. For example, an early version of Bolman and Deal's (1984) cognitive framing theory was used in a case study of college presidents to "explore and, to the extent possible, identify patterns in how presidents make sense of, or interpret, what they do." "Their fundamental conceptions, or implicit personal theories, of organization and leadership direct their attention to certain aspects of their organizational worlds and away from others" (Neumann and Bensimon 1990, 679, 678).

These researchers used framing in several ways during their analysis phase as a categorization tool. Framed perspectives enabled researchers to categorize, describe, and compare leaders' styles. Because data includes situational context, these researchers were able to use framed perspectives to define four distinct presidential types based on typical academic leadership scenarios.[5]

Four different framing schemata were constructed by Bolman and Deal (2008) for the study of organizations: structural, human resource, political, and symbolic. While distinctly different in their definitions, they are intended for simultaneous rather than separate use. This reduces the disadvantages of using schemata such as observer bias or over-simplified explanations of phenomena. Predefined frames enable researchers to quickly shift among the four frames and mentally encode observations.

[5] The researchers also cautioned that defining presidential types were not the ends of the study but the means of understanding and basis of future research.

Framing Theory can be used to identify an organizations' dominant type or style. While not always correlated, an organization's age may be a factor in its dominant style. For example, the Ford Motor Company is more than a hundred years old so it is more likely to demonstrate *structure* frame characteristics than a comparatively young company, such as Apple, where *symbolic* frame characteristics are is more pronounced.

Corporate leadership styles may exhibit a dominant frame. For example, Henry Ford's leadership style was marked by structure frame characteristics similar to that of a family's hierarchy. This was a popular organizational leadership style as the Industrial Revolution evolved corporations from family-owned trades. Conversely Steven Jobs' leadership at Apple was heavily marked by symbolic frame characteristics. Jobs' leadership inspired not only employees but also devout consumers. The symbolic leadership style has recently become more popular coincidental with the advent of dot-com businesses.

Framing Theory enables other unique research opportunities surrounding corporate histories, intra-organizational comparisons, and instinctive behavior. Frame analysis of organizations can be time sensitive and reflect organizational changes because corporations are dynamic due to their competitive nature. Time-anchored frame analyses can produce valuable longitudinal data regarding the influences of organizational change and subsequent behavior changes. Organizational framing can be adapted for the comparative analysis of decentralized business activities such as different corporate divisions, regions, or functions. Lastly, Framing Theory provides insight to organizations' instinctive behavior including those that influence packaging decisions.

In order to better distinguish each of four organizational frames, Bolman and Deal assigned descriptors that include: metaphors, central concepts, image of leadership, and basic leadership challenge (Table 1). The following section provides an overview for each of the frames and their implications for packaging decisions.

Table 1. Overview of the Four-Frame Model

Descriptor	Structural	Human Resource	Political	Symbolic
Metaphor for Organization	Factory or machine	Family	Jungle	Carnival, temple, theater
Central Concepts	Rules, roles, goals, policies, technology, environment	Needs, skills, relationships	Power, conflict, competition, organizational politics	Culture, meaning, metaphor, ritual, ceremony, stories, heroes
Image of Leadership	Social architect	Empowerment	Advocacy and political savvy	Inspiration
Basic Leadership Challenge	Attune structure to task, technology, environment	Align organizational and human needs	Develop agenda and power base	Create faith, beauty, meaning

2.12.1.1 Structural Frame

The structural frame is primarily focused on an organization's structure and while the research using this frame can overlap with value chain modeling, this frame provides a richer and deeper understanding of leaders, employees, and their interactions. The metaphor for the structural frame is a factory or a machine. This indicates an amount of complexity and precision that requires coordination in order to operate.

There are six central concepts to the structural frame with the first four being natural tenets for most businesses and organizations: rules, roles, goals, and policies. *Rules* are established by organizations to ensure consistency in coordinating its complexities. *Roles* are also defined for the same reason and apply to individual employees and organizational

functions. *Goals* provide leaders, functions, and employees with congruency for their different roles. *Policies* are similar to rules but they define a corporation's core characteristics and subsequent behaviors. For example, a company may have a policy that allows employees to volunteer some of their work time in the service of charitable causes. This reflects the corporation's value on volunteerism and charitable giving.

The other two structural frame concepts are the organization's use of *technology* and its recognition of *environments*. For example, an organization's ability to adapt to new technologies, such as Internet retailing, can drive success or failure for the business. Equally important is an organization's ability to recognize changing environments such as economic downturns or globalization. Structural framing specifically examines organizations' adaptation to new and emerging technologies and environments.

The stereotypical image of a leader from the structural cognitive lens is the *social architect*. For example, Henry Ford is clearly portrayed as a social architect particularly as he tried to integrate farmers as part-time factory workforces via his Village Industries program (Banham 2002). The structural frame's basic leadership challenge is attuning an organization's structure with its tasks, technology, and environment.

The structural frame recognizes the organizational tension between the two basic concepts of *differentiation* and *integration* that pertains to corporate packaging decision-making. Organizational *differentiation* is the segmentation of an organization into units as it copes with various external environmental entities (Lawrence and Lorsch 1967). For example, a company's sales unit interfaces with consumers while its production unit deals with suppliers. As this causes various managers to have "a limited span of surveillance" and "the capacity to

deal with only a portion of the total environment" (Lawrence and Lorsch 1967, 8), organizational *integration* is needed to unify effort and create goal congruence.

Organizational differentiation defines how the variety of corporate work is assigned. Task differentiation can be accomplished through various segmentations based on knowledge or skills, time, product, customers or clients, place or geography, and processes (Mintzberg 1979).

Organizational *integration* determines how those work assignments are coordinated and can be accomplished vertically or laterally. The former uses formal chains of command while the latter relies on less formal methods such as meetings, task forces, matrix structures, and networks. Both integration methods have advantages and disadvantages. Vertical integration relies on a *top-down* approach and while this is generally efficient, it is not necessarily effective (Horngren, Datar, and Foster 2006). Conversely, lateral integration takes a participative *by-committee* approach and while it is generally effective, it is not necessarily efficient (Fernandes 1978).

The structural frame provides insight to organizations considering structural changes. Regarding organizational change, Bolman and Deal suggest (2008, 69), "Understanding the complexity and variety of design possibilities can help create formal [organizational] prototypes that work for, rather than against, both people and collective purposes."

The structural frame provides insight to organization's behavior with respect to their PDMs. Assuming that an organization must structurally operate as a machine due to complexities, corporate PDMs must:

- perform within a set of established organizational rules;

- have well-defined roles as a function and as individual PDMs;
- have clear and non-conflicting goals for its packaging designs;
- operate within the organization's established policies;
- assess and adopt emerging technologies as warranted;
- assess and adapt to changing business environments.

The leadership challenge for corporations and PDMs is attuning all the tasks of the packaging function to technology and environment. This is also the foundation for the structural challenge of creating EOP.

2.12.1.2 Human Resource Frame

The human resource frame looks beyond the organization's structure and focuses on individuals and how the organization behaves towards them. A *family* is the metaphor for this frame. This illustrates the human resource perspective's value of the individual and their harmonious interactions for the good of the organization.

The central concepts of the human resource frame are the *needs*, *skills*, and *relationships* of the people that comprise the organization. Individual needs include the basic employee tenets of happiness, fulfillment, satisfaction, and enrichment that potentially can all be gained through working. Individuals' skills directly relate to their existing abilities and the periodic assessment of training needs. Relationships are also important concepts for this frame due the organization's needs for the harmonious and productive activity of its employees.

The human resource frame's leadership image is that of empowerment. This does not mean that organization leaders should abdicate their authority but instead, the human resource framed leader empowers employees because they recognize the value of employees

and the potential benefits to the organization. This is particularly true with respect to employees' needs, skills, and their relationships. This explains why the basic leadership challenge within the human resource frame is matching organizational needs with its people's needs. The human resource frame explores how well these two sets of needs fit together. A mismatch, be it human-based or organization-based, can cause performance issues at both the personnel and organizational levels.

Employee motivation can be a key corporate attribute for packaging decision-making (Greenhouse 1981). Some organizations are motivated to invest in the training and education of their PDMs on an on-going basis for competitive purposes (Falkman 2001b). Educating PDMs is one way that organizations can increase employees' self-esteem while adding value to the organization.

The human resource frame has the potential to provide unique insight to the interpersonal relationships of PDMs within organizations and the associated influences. The human resource frame explores how business dynamics, such as continual reorganizations, corporate mergers, and acquisitions, can impact workers. For example, corporate downsizing can be demoralizing and is potentially more costly than alternatively treating workers as along-term assets.

2.12.1.3 Political Frame

The political frame is primarily focused on organizational dynamics that are not typically visible from the structural or human resource frames. This is indicated by the metaphor of a *jungle*. The central concept is *power* that is not necessarily derived from organizational

hierarchy but instead arises from the central concepts of the political frame being *conflict*, *compromises*, and *organizational politics*.

The political frame's leadership image is one of effectiveness through *advocacy* and *political savvy*. These leaders' basic challenge is developing their own agenda and power base. While these may seem undesirable leadership or organizational attributes, they can be very beneficial for organizations in times of change or crisis.

Politics has been used to describe both internal and external corporate conflicts that influence packaging decision-making (Meyers and Gerstman 2005). While power and conflict shapes decision-making, it is not necessarily unproductive. Key to the political frame in organizational behavior is ensuring corporate politics is more beneficial than detrimental to the organization.

The political frame potentially explains both positive and negative influences on PDMs. For example, if an organizational leader of a particular function sees the packaging function as useful to an expanded power base, the PDM may be seen favorably and packaging designs advocated. Contrarily, if a politically savvy organizational leader sees the packaging function as inconsequential or even as a burden, the PDM may be perceived as an adversary and packaging innovations may be stifled.

The political frame enhances observation and description of other organizational behaviors with respect to the PDM such as accountability, responsibilities, structure, and reporting level. Each of these behaviors can be political influenced within organizations. Using both the structural and political frames to observe the same phenomena can enable a fuller understanding of organizational influences on PDMs.

2.12.1.4 Symbolic Frame

Symbolic frame analysis is particularly useful in analyzing contemporary organizations that have deemphasized structure and instead emphasize context. The symbolic frame's metaphor is a *carnival*, *temple*, or *theater* that indicates the experiential nature of the organization.

More than a family, the symbolic frame explores the unification of thought among employees, leaders, and between each other. The central concepts of the symbolic frame include: *culture*, *meaning*, *metaphor*, *ritual*, *ceremony*, *stories*, and *heroes*. In business terms these concepts may seem abstract or even ethereal, but they can create powerful employee motivation. Corporate symbolism can provide unity of purpose that overcomes organizational conflict.

What symbolic organizations forego in efficiencies they more than make up for in creativity with purpose. For example, when Apple holds periodic new product rollout meetings, these events can be described with respect to each of the symbolic frame central concepts. Leaders, employees, consumers, and even the press are unified by the ritual and ceremony of the event. Apple's success would seem to be deeper than just innovative products and as the symbolic organization motivates leaders and employees giving them unity of purpose.

The image of a symbolic organization's leader is one of inspiration. For example Apple's cofounder, Steve Jobs, successfully fulfilled that role particularly when he presided over new product launch meetings. Given his cyclic bouts with life-threatening illnesses, his periodic reappearances at these events are nearly resurrections when viewed through the symbolic frame.

The basic leadership challenge of the symbolically framed organization is to *create faith*, *beauty*, and *meaning*. While these goals may not seem congruent with classic organizational objectives, having an organizational context of faith, beauty, and meaning can be an incredibly motivating force for employees and leaders. If harnessed or channeled into classic organizational objectives, such as innovation and productivity, inspired organizations can exceed expectations.

Bolman and Deals' defined attributes of symbolic organizations have been used to explore emerging business needs such as *virtual teams* comprised of globally dispersed members (Holton 2001). In order to build mutual trust and collaboration among team members that can't physically interface, organizations have used humor, ritual, and ceremony to foster team camaraderie.

Adding packaging to a symbolic organization's focus can produce packaging that is as innovative as the products contained. Again using Apple as an example, it is not surprising that their finished goods packaging is often as innovative as the product inside. At some level this packaging validates the consumer's selection and purchase. For consumers, experiencing Apple packaging can be a memorable event.

2.12.2 Framing Theory Applied

Bolman and Deal's Frame Theory has been used to explore organizational behavior for more than twenty-five years (Bolman and Deal 1984). Framing Theory strengths include its adaptability for study of leaders, employees, and team peers in a variety of situations. Its adaptability has also made framing a common methodology for social scientists. Such social studies have included diverse subjects such as bargaining and negotiations (Putnam and Holmer

1992), hostage situations (Vecchi 2002), household workplaces (Avery and Baker 2002), and performance analysis methodology (Hatcher and Ward 2008).

Framing can be used in different phases of qualitative research due to its ability to be both a lens for viewing phenomena and a means of categorizing observations. Framing Theory can be applied for directing research, analyzing data, or reporting findings. Framing Theory can even be used in meta-theoretical discussions to comparatively evaluate research methodologies and perspectives.

2.13 Organizational Behavior Summary

Organizational behavior is a complex discipline that is readily segmented by two foci, structure-based perspectives and relationship-based perspectives. While there are a variety of organizational behavior theories and concepts available for studying organizational behavior, two are very applicable to the study of organizations and their behavioral influences on packaging decisions. These are Value Chain Modeling and Framing Theory.

Value chain modeling provides the structure-based perspective of organizational behavior with respect to PDMs' organizational accountability, responsibilities, structure, and reporting level. VCMs also enable the study of different packaging decision-making functions within a single corporation. As a research tool, VCMs enable the analysis and summarization of organizations' structure-based characteristics that influence packaging decisions and their PDMs' abilities to create EOP.

Framing Theory provides the relationship-based perspective of organizational behaviors with respect to PDMs' structure, reporting levels, organizational frames or work environments, and the influences of organizational change. The relationship-based perspective includes the

structural, human resources, political and symbolic frames to view and analyze organizational behaviors that influence packaging decisions and PDMs. The structural frame also compliments the structural perspective of VCMs. Lastly framed perspectives enable insight to the interpersonal relationships among leaders, employees, and groups.

In combination, value chain modeling and Framing Theory enable a multi-theoretical framework for studying organizational behavior that influence packaging decisions. These analytical tools can better define organizations' positive and negative influences on their PDMs' abilities to create EOP.

2.14 Research Propositions

The literature review of packaging management and organizational behavior indicates gaps in knowledge regarding organizational influences on packaging decision-making. While existing literature provides examples of packaging decisions that have not optimized corporate needs, it is not clear to what extent or which organizational behaviors influenced those decisions. Packaging decisions that were positively influenced by organizational behavior, or were at least not negatively influenced, seem to better fulfill corporations' holistic packaging needs and also mitigate packaging-related risks. But rarely has the literature presented both the positive and negative influences that potentially result from specific organizational behaviors. Furthermore, such balanced presentations typically have not included a comprehensive set of behaviors and instead have only focused one or two behaviors simultaneously.

Research propositions were developed to further explore the relationship between organizational behavior and packaging decision-making. These propositions consider formal

decision-making processes, such as those made with established criteria, and informal decision-making processes, such as those simply based on experience or preference. Consistent with the literature, the propositions are segmented by organizational behaviors that are structure-based and relationship-based. As previously noted, some behaviors exhibit characteristics of both. This potential duality is further described as part of the propositions presented below.

Of the six propositions developed for the research, the first two focus on structure-based organizational behaviors.

P_1: The PDM's organizational accountability influences packaging decisions.

While it is reasonable for PDMs to be accountable to functions that would most benefit from the organizational relationship, accountability can also be detrimental to the organization. It should not cause the undervaluing, discounting, or dismissal of organizational function's packaging needs other than those of the organizational function that the PDM is accountable to. This negatively impacts the organization as a whole by inhibiting the creation of EOP and introduces corporate risks. The measure of this variable is *how* a PDM's organizational accountability has positively or negatively influenced packaging decisions for the entire organization.

P_2: The PDM's organizational responsibilities influence packaging decisions.

Organizationally enabling packaging decision-makers to represent a wide variety of organizational functions' packaging needs increases the potential for creating EOP. Conversely, organizationally limited responsibilities negatively influence packaging decisions by constraining criteria or even exclude the packaging needs of specific organizational functions. Such

influences inhibit the creation of EOP. The measure of organizational responsibilities is the breadth of the various functions included in packaging decision-making as well as the potential weightings and prioritization of diverse packaging needs.

The organizational behavior described in these two propositions can be modeled in value chains as PDM attributes. For example, if a PDM is organizationally accountable to a primary activity, the packaging needs of other primary activities may be discounted or even excluded from, formal packaging decision criteria. Similarly, a PDMs' organizational responsibilities can be modeled by noting the breadth of the primary and supporting activities included in packaging decision criteria.

The next two propositions include organizational behaviors that include both structure-based and relationship-based influences.

P_3: The PDM's organizational reporting level influences packaging decisions.

A PDM's hierarchical reporting level within the organization positively influences packaging decisions through organizational empowerment and negatively through the lack of organizational authority to create EOP. Evidence of the positive influences of this phenomenon include *how* empowered PDMs have authority over packaging decision processes and criteria due to their relative position in the organization's hierarchy. Negative influences include *how* PDMs are not adequately empowered related to their organizational reporting levels. This proposition does not require that PDMs be corporate executives to be adequately empowered, but it does propose that negative organizational influences occur due to a PDM's relatively low stature in the organization's management. Negative influences can result from inter-

organizational and interpersonal relationships that perceive PDMs as weak or vulnerable due to their reporting levels. These influences either enable or hinder a PDM's ability to create EOP.

P_4: The PDM's organizational structure influences packaging decisions.

The PDM's structure established by the organization can positively or negatively influence packaging decisions. It hypothesizes that an organizational structure having more people, such as a fully staffed PDM department, is less susceptible to negative organizational influences than a single packaging specialist. Here again an apparent structure-based behavior includes the potential influences resulting from relationship-based behaviors. The measure of the influences is the correlation between a PDM's organizational construct and *how* that enables or hinders the creation of EOP.

While the organizational behavior described by this proposition closely relates to VCM attributes, Framing Theory is also pertinent to the research. This apparent redundancy is actually complementary as the two research approaches augment each other for organizational behaviors that exhibit structure-based and relationship-based characteristics, such as organizational reporting levels and structures.

The final two propositions are more fully rooted in relationship-based behaviors than the previous four. The relationship-based organizational behaviors of frames and change are commonly absent from packaging management literature. While the study of relationships is much more prevalent in organization behavior literature, it lacks specific commentary or connectivity to packaging management. This research intends to link the two subjects more fully. The next proposition concerns organizations' frames or more readily recognized as organizational working environments.

P_5: The PDM's organizational frames influence packaging decisions.

Frames are the organizational context that PDMs operate in and are controlled by the organization. It is common for organizations and leaders to exhibit dominant frame characteristics and behaviors. All frames, even non-dominant ones, can influence packaging decision-making due to the relationships between human actors. Evidence of negative frame-related influences includes the contextual scenarios that permit intra-organizational and interpersonal relationships to unduly influence or compromise packaging decision criteria or decision-making processes. These influences can be subtle or unobvious and therefore introduce unforeseen risks to the enterprise.

Evidence of positive frame-based influences include the contextual scenarios that permit organizational relationships to make packaging decisions that fulfill the majority of the organization's packaging requirements in balance. This organizational context enables EOP and mitigates packaging-related corporate risks.

The final proposition addresses organizational changes and PDMs.

P_6: Organizational changes influence PDMs.

All organizational changes have the potential to influence PDMs particularly when evolving business strategies involve a corporation's packaging. Such strategies directly or subtly manipulate a PDM's organizational accountability, responsibilities, reporting level, structure, or frames. Such organizational changes either enable or hinder the reconfigured PDM's ability to produce packaging designs that fulfill the majority of an organization's packaging needs in

balance. Positive change-based influences are demonstrated by PDMs that are better enabled to pursue packaging designs that are better for their organizations.

Organizational changes that strategically include PDM's can produce packaging decisions that are better for an entire organization. Conversely, organizational changes that do not strategically include packaging-related risk management (i.e. assessment and mitigation planning), can reduce corporate profits and damage brand reputations.

The previously presented conceptual model of theoretical relationships has been modified to better reflect the research by listing the organizational behaviors addressed in the research propositions (Figure 7). Their influences on packaging decision-making has been annotated to include packaging decision criteria and packaging decision-making processes as well as PDMs with respect to organizational change. These subsequently have positive and negative effects on packaging designs as indicated by EOP and suboptimal or dysfunctional packaging, respectively. Lastly, because it is equally important to understand corporate risks of negative organization-based influences on packaging designs, several common corporate risks have been added to the conceptual model.

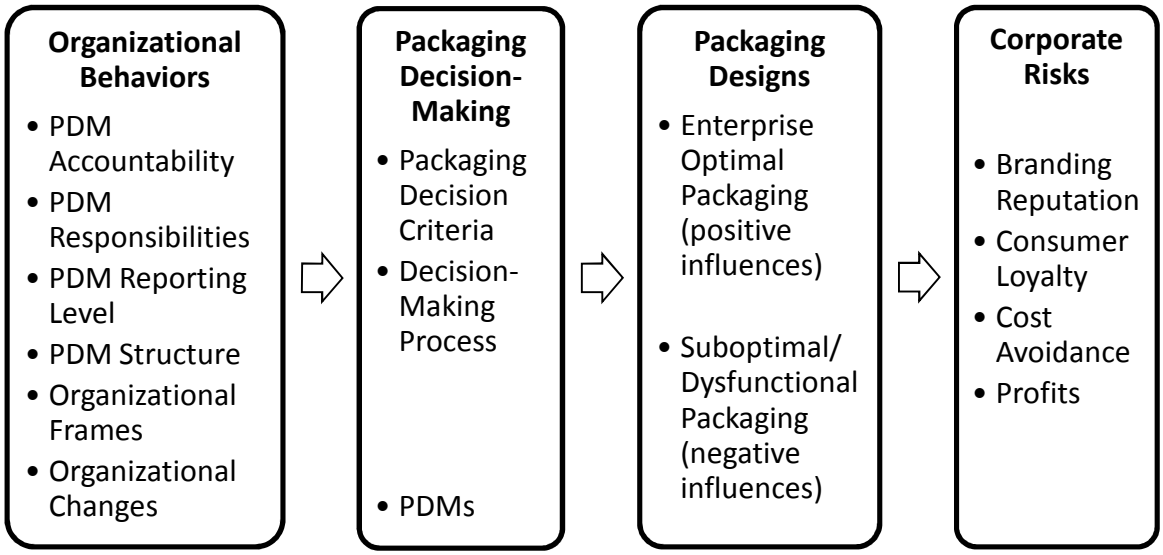

Figure 7. Conceptual Model of Theoretical Relationships (Modified)

The research of organizational behavior with respect to packaging management potentially provides insight to how packaging designs are influenced including avoidable corporate risks. With the knowledge gained through scientific study, organizations can better enable their PDMs to create enterprise-optimal package designs and mitigate corporate risks. The next chapter describes the methodology used to conduct the research.

CHAPTER 3. RESEARCH METHOD

The previous chapter described the limitations of research on corporate packaging management. Quantitative research, in the form of surveys to packaging professionals, has yielded only cursory information and proportional statistics regarding items such as PDMs' organizational alignment. The research findings have not described *how* organizations influence PDMs or successfully manage them.

Qualitative research, in the form of select case studies, has explored PDMs in their organizational settings. Some of the research findings confirm that organizational behavior influences packaging decisions. The breadth of organizational behaviors has not been explored included potential negative consequences.

Both previously conducted qualitative and quantitative research have implied, if not specifically recommended, that findings regarding packaging management can be generalized to other organizations. Regarding this potential, the previous chapter included cautionary comments from several authors against attempts to generalize packaging management practices among businesses and industries (Deming 1962; Barlow 1969; Fernandes 1978).

For these reasons, the research methodology described in this chapter intends to provide a holistic and comprehensive understanding of packaging decision-making in the context of organization behavior. By simultaneously exploring several organizational behaviors across multiple organizations, insight is gained regarding how packaging can be successfully managed. Because the research is exploratory and not explanatory, the broad generalizing of findings should be resisted. Instead, the insights gained provide guidance and consideration to organizations seeking to better manage their PDMs and increase the benefits of packaging

while reducing corporate risks. This specifically includes the theoretical relationships described in the modified conceptual model as presented at the end of Chapter Two (Figure 7).

3.1 Case Study Research Methodology and Design

The selected research methodology is qualitative case study research because it is well suited to explore behavioral phenomena in contextual conditions (Yin 1993; Holloway and Wheeler 1996; Cresswell 1998; Robson 2002; Lewis 2003; Yin 2009). This is an advantage over alternative research methods such as quantitative survey-based research (Yin 2009). Case study research enables the observation of organizational behavior phenomena in context by eliciting *how* packaging decisions and PDMs are influenced by the organizational behaviors described in the research propositions. The research design enables key insights to the situational context that precipitate influences, the effects of the influences, and any created or mitigated risks due to the influences and effects.

A multiple-case embedded case study was designed with the main research unit of analysis being the corporate organization (Yin 2009). Five corporations or cases were investigated for comparative purposes.[6] Embedded within each of the cases were multiple units of analysis being the different PDMs for assembly components, finished goods, and service parts. Researching multiple embedded units adds value for intra-case and inter-case comparative analysis.

Case study methodology commonly consists of in-depth interviews and supplemental supporting data. The research design ensured the gathering of *triangulation data* from other

[6] Five cases were used to show consistency regarding the propositions. The determining factor for not pursuing additional case candidates was a function of diminishing returns of novel data.

sources such as supplemental interviews or archival documentation. This evidentiary database was then analyzed for themes and evidence convergence regarding the research propositions. This is further described in the analysis section.

3.2 Case Study Scope

Reliable research requires rigor while remaining manageable. For this reason, case candidates were limited to the single industry segment of durable goods.[7] Durable goods include a wide range of products such as appliances, automobiles, aircraft, machinery, and heavy equipment. This industry segment was selected because durable goods producers routinely include service as one of their primary activities. This scope enabled embedded case diversity that included service parts PDMs. (Other industries, such as consumer goods, do not necessarily have this additional primary activity or the unique packaging that service parts require.)

The case studies of durable goods producers include the research of embedded cases for diverse packaging decision-making that included finished goods as well as assembly components and service parts. For example, durable goods producers make packaging decisions for finished goods. In this embedded case, the PDM's design responsibilities potentially include corporate functions such as production, marketing and sales, and outbound logistics. Each function potentially has unique packaging needs. Also, the enterprise's relationships with distributors, retailers, and end consumers may also be considered during the

[7] About limiting case study design with respect to manageability, Yin (2009, 53) says, "the decision to undertake multiple-case studies require extensive resources and time beyond the means of a single student or independent research investigator. Therefore, the decision to undertake multiple-case studies cannot be taken lightly."

decision-making process. All of these packaging needs may not be harmonious yet the PDM must make EOP decisions for finished goods.

The same company may have distinctly different PDMs for inbound assembly components. In this situation, the PDM's design responsibilities may include inbound logistics, purchasing, and production with each organizational function potentially having unique packaging requirements. The enterprise's relationships with its suppliers cannot be ignored in the packaging decision-making process for assembly components. Again, all of the packaging needs may not be harmonious yet the PDM must make EOP decisions for assembly components.

Durable goods producers require distinctly different packaging for service parts. In this embedded case, the PDM's responsibilities may include production, marketing and sales, and outbound logistics with each organizational function potentially having unique packaging needs. The enterprise's relationships with its distributors, authorized repair outlets, and *do-it-yourself* consumers cannot be ignored. Here too, all of the packaging needs for service parts may conflict yet the PDM must make EOP decisions. These three packaging decision-making scenarios are subunits of analysis in this embedded case study research.

Embedded case study has several benefits such as expanding the amount of data without expanding the number of different corporations being studied. This reduces the variability of data that can arise from studying multiple corporations including those with significantly different packaging. It enables the deeper exploration within select corporations and aids in the quality of both intra-case and inter-company analysis. Lastly, data triangulation

and internal validation are also aided due the ability to compare distinctly different packaging decision-making scenarios within the same organization.

3.3 Case Study Instrumentation

Although there are a variety of qualitative research methods available, case study researchers often use in-depth interviews (Snape and Spencer 2003). The research interviewed candidates who were selected due to their intimate knowledge of package decision-making within their organizations. Multiple informants were sought in order to provide in-depth representation of packaging decision-making. Key informants were typically packaging designers, packaging managers, or packaging committee members. Interview candidates also included other affiliated informants that were discovered during the research also known as the *snowballing technique*.

An interview protocol was created in full question format (Appendix A). In-depth interviews were scripted to combine the structure of prescribed probing questions with the flexibility of narratives (Legard, Keegan, and Ward 2003). Critical incident technique was used to design narrative questions that collect informants' perspectives of events in context and without the potential biasing effects of scripted questions (Johnston 2005). Key informants were asked open-ended questions requiring their narration of specific positive and negative packaging incidences. Additional probing questions and prompts were included in the interview protocol to ensure both the depth and richness of data.

In order to provide a direct link between interview questions and the research propositions, the interview questions were pilot-tested (Maxwell 2005). Several mock interviews were conducted with PDMs similar to, but not actual, case candidate PDMs. This

refinement step ensured that the final interview questions were not only pertinent to the intended research but readily understandable and articulated.

The research method was not only designed to provide a variety of individual perspectives but also obtain triangulating data (King and Horrocks 2010). Other key evidence that logically links interview data with research propositions includes, but is not limited to, organizational charts, corporate objectives, functional activity objectives, individual performance review criteria, strategic corporate goals, documented packaging decision criteria, packaging cost models, meeting minutes, and corporate policies. An evidentiary database was constructed for each case including notes and recordings from in-depth interviews, informant narratives of critical incidents, and pertinent organizational documentation as discovered during the research.

3.4 Case Study Analysis

Planning the analysis of case study research not only enables research efficiency but also ensures consistency that leads to quality conclusions, but a data analysis plan must not be so rigid that it actually influences research findings (Yin 2009). For this reason, data analysis plans are subject to change depending on any needed modifications to the data collection process or based on the actual data collected. For example, the explanation-building process may become iterative and proposition reshaping may be necessary as case data are compared.

The method of data analysis for this research was thematic analysis (Maxwell 2005). Thematic analysis enables the validation, modification, or dismissal of research propositions. The coding scheme builds from keywords or phrases in the research propositions, such as “accountability” and “responsibilities.” Interview data and interviewing notes are reviewed for

research keywords with respect to their context. This enables themes to evolve from the evidentiary database.

Cross-case and embedded-case comparisons include thematic analysis to explore the cause and effect relationships with respect to each proposition. This enables data analysis with respect to the modeled theoretical relationships including packaging-related corporate risks.

The use of multiple perspectives is particularly useful for case study analysis. This is why both the value chain and four-frame models were used in gathering and analyzing research data. These models each have strengths that enable organizational influences to be identified, categorized, and analyzed.

Value chain modeling provides the means of *locating* the diverse intra-company PDMs within the organizations. VCMs provided insight to each of the organization's PDMs' attributes such as their accountabilities and responsibilities while Framing Theory provided insight to the PDMs' relationship-based attributes. The research of organizational behaviors that have both structure and relationships characteristics is augmented by both value chain modeling and Framing Theory.

3.4 Case Study Validity

Yin (2009) proposes four primary test criteria for judging the quality of research designs and their subsequent conclusions: construct validity, internal validity, external validity, and reliability. The design of this qualitative research incorporated elements from all four criteria. Regarding the *construct validity* test, case research was designed to collect multiple types of evidence and use multiple sources. Additionally, key informants were permitted to comment on gathered case study data. *Internal validity* was assured through data analysis that included

pattern matching. *External validity* was assured by the multi-case research design that is replicable within the defined scope of the durable goods industry. The test of *reliability* is satisfied by data that was collected per an established interviewing protocol and the creation of an evidentiary database.

The next chapter describes the results and findings of the research.

CHAPTER 4. RESULTS AND FINDINGS

The chapter begins with three sections that profile the assembly components, finished goods, and service parts PDMs with respect to their organizational accountabilities, responsibilities, reporting levels, structures, frames, and changes. Section 4.4 analyzes the cases with respect to the research propositions.

Regarding the five cases, four had assembly components PDMs, three had finished goods PDMs, and four had service parts PDMs (Table 2). Of note, one case had a singe PDM function responsible for all three commodities.

Table 2. PDMs by Cases

PDM Type	Heavy Equipment ("H")	Automobile ("A")	Appliance ("L")	Printing Equipment ("P")	Computer ("C")
Assembly Components	**X**	**X**	**X**		none
Finished Goods	none	none	**X**	**X**	**X**
Service Parts	**X**	**X**	**X**		none

The case study appendix (Appendix B) contains data that describes each PDM with respect to the researched organizational behaviors, evidential validation of theoretical relationships, and intra-case comparisons of PDMs.

4.1 Inter-Case Comparative Profiles of Assembly Components PDMs

This section provides inter-case comparisons of the assembly components PDMs with respect to each of the researched organizational behaviors. Their profiles are summarized below (Table 3).

Table 3. Profiles of Assembly Components PDMs

Case	Accountability (P1)	Responsibilities (P2)	Reporting Level (P3)	Structure (P4)	Frames (P5)	Change (P6)
H	Global Supply Chain (Supporting Activity)	Inbound Logistics, Production Operations, Purchasing, Suppliers	Mid-Management	Small team with a manager	Human Resource, Political (positive)	P1 - P4, (P5); Create central packaging authority for emerging "pull production" strategy; Optimize (leverage) packaging; Eliminate dysfunctional and suboptimal packaging.
A	Material Handling (sub-function of Assembly Operations; Primary Activity)	Inbound Logistics, Assembly Operations (including End Users), Corporate and Union Safety, Industrial Engineering, Quality, Purchasing, Suppliers	Non-Management	Individual in a large cross-functional team	Structural, Human Resource, Political (negative)	P1, P2, and P3 were altered due to the corporation's partnership. Then P2 and P4 were repeatedly expanded to pursue better packaging. Then P1 was altered to add non-packaging tasks to the PDM.
L	Supply Team (Supporting Activity)	Inbound Logistics, Manufacturing (all locations), Purchasing	Management	Central team with remote individuals	Human Resource, Political (negative)	P1 - P4, (P5); Create central packaging authority for emerging operational cost-reduction strategy; Optimize (leverage) packaging; Eliminate suboptimal packaging.
P	Transportation (Supporting Activity)	Inbound Logistics, Manufacturing, Outbound Logistics, Purchasing, Product Development, Marketing, Legal	Management	Small group with a manager	Human Resource, Political (negative)	P1, P2, P4; Consolidation strategy created a single corporate-wide PDM; Reduce PDM resource costs including human resources; Re-emphasize Transportation responsibilities.
C	none	none	none	none	none	none

4.1.1 Organizational Accountabilities of Assembly Components PDMs

Regarding the assembly components PDMs' organizational accountabilities, the heavy equipment (H) manufacturer's, appliance (L) manufacturer's, and the printing equipment (P) manufacturer's PDMs are organizationally accountable to supporting activities such as the supply chain or transportation functions. The automobile (A) manufacturer's PDM is organizationally accountable to the material handling function that is sub-activity for the organization's primary activity of assembly operations.

4.1.2 Organizational Responsibilities of Assembly Components PDMs

Regarding the assembly components PDMs' organizational responsibilities, the H, A, L, and P PDMs consider the packaging requirements for the primary activities of inbound logistics and assembly operations as well as the packaging requirements for purchasing, a supporting activity. The H and A PDMs additionally include component suppliers' packaging needs as part of their decision-making responsibilities.

4.1.3 Organizational Reporting Levels of Assembly Components PDMs

Regarding the assembly components PDMs' organizational reporting levels, the H, L, and P PDMs are described as management with the A PDM being the non-management exception. The H PDM is further self-described as *mid-management* signifying that the reporting level is neither senior management nor entry-level management.

4.1.4 Organizational Structures of Assembly Components PDMs

Regarding the assembly components PDMs' organizational structures, the H, L, and P PDMs are configured as small teams comprised of several individual PDM specialists having a

PDM manager. (This includes the P PDM that administers assembly components, finished goods, and service parts packaging for the entire organization.) Of note, the L PDM's team has individual packaging specialists that are remotely located at manufacturing sites and do not physically reside within the central group. The A PDM is the exception to the team structure and is an individual PDM that participates in a cross-functional team of peers.

4.1.5 Organizational Frames of Assembly Components PDMs

The assembly components PDMs' organizational frames are diverse in that they have multiple characteristics of different frames. The H, A, L, and P PDMs' working environments enable the positive influences of the human resource frame. One informant related to the human resource frame's leadership style of empowerment and described the working environment, "Empowerment. They have really allowed that in our organization - pretty free rein in defining the problem and evaluating the problem, gathering the data and putting a solution together."

Simultaneously, the A, L, and P PDMs experience negative influences resulting from their organizations' occasional political frames. The political frame's metaphor of a jungle was used by an informant to describe the working environment, "The whole packaging function is a jungle sometimes. You have those days that are crazy and it can directly shut down the plant and you have to resolve it."

Contrarily, the H PDM experiences positive influences resulting from an organizational leader's political style. In that case, decisive authority was required to organizationally empower the PDM. Having politically savvy leaders, the leadership style within politically-

framed organizations, enabled “networking from above” that was required to complete the PDM’s organizational transformation from dispersed to centralize PDMs.

The A PDM additionally experiences the positive influences from their organization’s structural frame. The structural frame’s metaphor of a machine was identified by the PDM because the cross-functional team performs “like clockwork”.

4.1.6 Organizational Change and Assembly Components PDMs

Regarding the assembly components organizational changes, the H, A, L, and P PDMs experienced deliberately manipulated organizational accountabilities, responsibilities, reporting levels, and structures.

The H, L, and P PDMs experienced organizational changes resulting from the emerging strategy to centralize PDM authority. The H organization did this to better enable an emerging pull production strategy. The L organization centralized its PDMs to pursue packaging-related cost reductions for all manufacturing sites. The P corporation consolidated its assembly components, finished goods, and service parts PDM groups into a single group to create uniformity and reduce overhead costs such as human resource expenses.

The A organization made repeated changes to its PDM as business strategies evolved over time. These primarily expanded the PDM’s organizational responsibilities in pursuit of better packaging designs for the organization. The A PDM’s organizational accountability and structure were concomitantly changed with evolving business strategies. The most recent organizational change for the A PDM includes incremental responsibilities beyond packaging decision-making.

Organizational changes resulted in improved organizational frames for the H and L PDMs by emphasizing the value of their human resources that better empowered the PDMs. But there is no evidence that organizational frames were deliberately altered and instead appear to have coincidentally changed with other organizational behaviors.

4.2 Inter-Case Comparisons of Finished Goods PDMs

This section provides inter-case comparisons of the finished goods PDMs with respect to each of the researched organizational behaviors. Their profiles are summarized below (Table 4).

Table 4. Profiles of Finished Goods PDMs

Case	Accountability (P1)	Responsibilities (P2)	Reporting Level (P3)	Structure (P4)	Frames (P5)	Change (P6)
H	none	none	none	none	none	none
A	none	none	none	none	none	none
L	Product Development (Supporting Activity)	Manufacturing, Outbound Logistics, Purchasing, Quality, Trade Partners, Retailers, Consumers	Senior management	Department with a manager	Human Resource, Structural, Symbolic	P1 - P4, (P5); Eliminate third-party services provider PDM to pursue EOP; Eliminate suboptimal packaging.
P	Transportation (Supporting Activity)	Inbound Logistics, Manufacturing, Outbound Logistics, Purchasing, Product Development, Marketing, Legal	Management	Small group with a manager	Human Resource, Political (negative)	P1, P2, P4; Consolidation strategy created a single corporate-wide PDM; Reduce PDM resource costs including human resources; Re-emphasize Transportation responsibilities.
C	Operations functions of each business group (Primary Activities)	Manufacturing, Outbound Logistics, Marketing, Purchasing, Quality, Cost Assurance, Research and Development, Finance, Regional Operations Teams, Distribution Centers, Consumers	Management	Departments for each business group with managers	Human Resource	P1, P2, P3, P4; "Centralization" strategy standardized organizational behavior for each product group PDM; Create an organization-wide PDM authority; Leverage packaging benefits for all product groups.

4.2.1 Organizational Accountabilities of Finished Goods PDMs

Regarding the finished goods PDMs' organizational accountabilities, the L and P PDMs are organizationally accountable to supporting activities, those being the product development function and the transportation function, respectively. The computer (C) manufacturer's PDM is accountable to the primary activity of operations.

4.2.2 Organizational Responsibilities of Finished Goods PDMs

Regarding the finished goods PDMs' organizational responsibilities, the L, P, and C PDMs consider the packaging requirements for the primary activities of manufacturing and outbound logistics as well as purchasing and marketing, that are both supporting activities. The L and C PDMs' responsibilities include the supporting activity of the quality function as well as external consumers' packaging needs. Other diverse but less frequent PDM responsibilities include the supporting activities of product development, legal, cost assurance, research and development, finance, regional operations, and distribution centers as well as external trade partners and retailers.

4.2.3 Organizational Reporting Levels of Finished Goods PDMs

Regarding the finished goods PDMs' organizational reporting levels, the L, P, and C PDMs' are management level with the L PDM self-described as senior management.

4.2.4 Organizational Structures of Finished Goods PDMs

Regarding the finished goods PDMs' organizational structures, the L, P, and C PDMs' are configured as groups or departments of individual PDM specialists having PDM managers. (This includes the P PDM that administers assembly components, finished goods, and service parts

packaging for the entire organization.) The C PDM's department is comprised of multiple groups of PDM specialists, each with its own PDM managers, that are assigned to organization's different product-centric business groups.

4.2.5 Organizational Frames of Finished Goods PDMs

The finished goods PDMs' organizational frames are diverse in that they exhibit multiple characteristics of different frames. The L, P, and C PDMs' working environments enable positive influences from the human resource frame. One informant related to the human resource frame's leadership image of empowerment because, "We have been able to demonstrate that we have a well designed development process that we use for packaging [and] that we can really optimize the performance of both our product and pack. So we have been able to quantify that in a number of ways and gain the confidence of our vice president that we in fact are doing the right thing for all of our different internal consumers as well as our external consumers."

The L PDM additionally experiences the positive influences resulting from the organization's symbolic frame. The structural frame's metaphor of a machine was identified with because, "We have a well developed process that engages product design people very early on and optimizes the level of protection the external packaging gives the product, so we are able to quantify a lot of those parameters and make them part of the optimum decision, we do that very early on therefore it is more of a methodically repeatable process that we go through including early simulation of the packaging design to ensure the robustness of the product and pack."

The P PDM additionally experiences negative influences resulting from the organization's occasional political frame and is rooted in the PDM group's workload and frequent "fire fighting." An informant described the historical and current working environments, "We had more engineers and more hands-on for more products. Now that we've combined the groups there's stuff that we just can't get to."

4.2.6 Organizational Change and Finished Goods PDMs

Regarding the finished goods organizational changes, the L and C PDMs experienced deliberately manipulated organizational accountabilities, responsibilities, reporting levels, and structures.

The L PDM experienced changes due to the emerging organizational strategy to eliminate all external third-party PDMs and create packaging designs that are better for the entire organization. The C organization's evolving business needs produced a "centralization" strategy that standardized the different product development groups' PDMs making them uniform with respect to organizational accountability, responsibilities, reporting level, and structure.

As previously described, the P PDM's organizational accountability, responsibilities, and structure were deliberately changed due to the corporate strategy to consolidate its assembly components, finished goods, and service parts PDMs into a single corporate-wide PDM.

Organizational changes resulted in improved organizational frames for the L PDM by emphasizing the value of its human resources, enhancing structured work environments, and even inspiring PDMs. While these positive influences from the PDM's new human resource, structural, and symbolic frames were found, there is no evidence that organizational frames

were deliberately altered and instead appear to have coincidentally changed with other organizational behaviors.

4.3 Inter-Case Comparisons of Service Parts PDMs

This section provides inter-case comparisons of the service parts PDMs with respect to each of the researched organizational behaviors. Their profiles are summarized below (Table 5).

Table 5. Profiles of Service Parts PDMs

Case	Accountability (P1)	Responsibilities (P2)	Reporting Level (P3)	Structure (P4)	Frames (P5)	Change (P6)
H	Quality (Supporting Activity)	Inbound Logistics, Warehouse Operations, Outbound Logistics, Purchasing, Marketing, Suppliers, Consumers	Mid-Management	Department with a manager and two groups with managers	Structural, Human Resource, Symbolic	P1 - P4, (P5); Eliminate dysfunctional packaging due to Warehouse Operations accountability & Purchasing-focused responsibilities; Repair Customer relationships
A	Distribution Operations (Primary Activity)	Inbound Logistics, Distribution Operations, Purchasing, Dealerships	Non-Management	Individual	Structural, Human Resource, Political (negative)	P2 & P4 were altered due to evolving business needs. Then an outsourcing initiative eliminated the internal PDM. Then evolving business needs re-established the PDM, altering P2, P4, and P5.
L	Warehouse Operations (Primary Activity)	Inbound Logistics, Warehouse Operations, Outbound Logistics, Purchasing, Marketing, Retail Partners	Non-Management	Individual	Human Resource, Symbolic	P3 & P4 were cyclically altered between a non-management individual and a department having a manger due to alternating strategies that reduced packaging-related costs or PDM human resource costs.
P	Transportation (Supporting Activity)	Inbound Logistics, Manufacturing, Outbound Logistics, Purchasing, Product Development, Marketing, Legal	Management	Small group with a manager	Human Resource, Political (negative)	P1, P2, P4; Consolidation strategy created a single corporate-wide PDM; Reduce PDM resource costs including human resources; Re-emphasize Transportation responsibilities.
C	None	none	none	none	none	none

4.3.1 Organizational Accountabilities of Service Parts PDMs

Regarding service parts PDMs, organizational accountabilities are split between primary and supporting functions. The A and L PDMs are organizationally accountable to primary activities, those being the distribution operations function and the warehouse operations function, respectively. The H and P PDMs are organizationally accountable to supporting activities, those being the quality function and the transportation function, respectively.

4.3.2 Organizational Responsibilities of Service Parts PDMs

The service parts PDMs' organizational responsibilities are very diverse. The H, A, L, and P PDMs consider the packaging requirements for the primary activity of inbound logistics. The H and L PDMs are responsible for warehouse operations, a primary activity for their organizations. The H, L, and P PDMs consider the packaging requirements for the organization's primary activity of outbound logistics. The A PDM includes the requirements for the primary function of distribution operations. Regarding the packaging requirements for supporting activities, the H, A, L, and P PDMs consider the purchasing function. The H and P PDMs include the packaging requirements for the supporting activity of marketing. The H PDM includes external suppliers and consumers as part of its organizational responsibilities. Other diverse but less-frequently mentioned PDMs responsibilities include legal function, product development function, and retail partners.

4.3.3 Organizational Reporting Levels of Service Parts PDMs

Regarding the service parts PDMs' reporting levels, they are split between management and non-management levels. The H and P PDMs are management level with the H PDM self-described as mid-management level. The A and L PDMs have non-management reporting levels.

4.3.4 Organizational Structures of Service Parts PDMs

The service parts PDMs' organizational structures are very diverse. The H PDM is structured as a department having two groups of PDM specialists with a manager for each as well as a PDM department manager. The P PDM is structured as a small group of individual PDM specialists with a PDM manager. The A and L PDMs are configured as individual PDM specialists.

4.3.5 Organizational Frames of Service Parts PDMs

The service parts PDMs' organizational frames are diverse in that they exhibit multiple characteristics of different frames. The H, A, L, and P PDMs have working environments characterized by the positive influences of human resource frames. Informants identify with the human resource frame's organizational metaphor of a family by describing their work environments in terms such as, "a tightknit group" and a "small, close group." The leadership style of empowerment was also identified with. One informant described, "We are very much empowered. In other words, my manager has little knowledge of what we do. He allows me to run it as I see fit… he's very hands-off." This indicates a work environment where organizational and human needs are aligned.

Additionally, the H and A PDMs working environments have positive influences due to their structural frames. One department leader identified with the structural frame's metaphor of a machine because of the PDM's emphasis on packaging standards that are methodically established and globally applied. Standardizing packaging decision-making meets several of the structural frame's central concepts such as rules, roles, goals, and policies.

The H and L PDMs have positive influences due to symbolic frames. An informant suggested that workers in the PDM's materials group exhibit a "higher calling" and are concerned with "not just getting parts out the door but to try and improve on our market share around the world." This is consistent with the symbolic frame's basic leadership challenge to create meaning in the work place.

The A and P PDMs also occasionally experience negative influences resulting from political frame behaviors. One informant described the working environment as, "Sometimes there's a lot of work to be done and sometimes it feels like we're putting out fires."

4.3.6 Organizational Change and Service Parts PDMs

Regarding service parts organizational changes, the H, A, L, and P PDMs experienced deliberate manipulation of their organizational attributes due to a variety of emerging business strategies.

Both the H and A PDMs' organizational accountabilities, responsibilities, reporting level, and structures were altered due to the emerging business need for eliminating dysfunctional packaging designs. For the H PDM, its previous organizational accountabilities and responsibilities negatively influenced packaging decision-making and put consumer loyalty and brand reputation at risk. For the A PDM, its organizational responsibilities and structures were

repeatedly altered due to evolving business strategies over time. These were the strategies to replace its organizationally internal PDM with an external third-party PDM followed by the restoration of its internal PDM and eliminating the third-party PDM. The strategy to outsource packaging decision-making was perceived as a cost-reduction strategy that inadvertently created suboptimal and dysfunctional packaging designs. The organization reversed its strategy to better enable EOP.

The L PDMs' organizational structures and reporting levels repeatedly alternated between a single non-management PDM specialist and fully-staffed PDM departments having managers. These changes resulted from cyclic organizational strategies between reducing packaging-related costs and reducing human resource expenses.

As previously described, the P PDM's organizational accountability, responsibilities, and structure were deliberately changed due to the corporate strategy to consolidate its assembly components, finished goods, and service parts PDMs into a single corporate-wide PDM.

Organizational changes resulted in improved organizational frames for the H and A PDMs by emphasizing the value of human resources, enhancing structured work environments, and inspiring PDMs. While the positive influences of the PDMs' new human resource, structural, and symbolic frames were found, there is no evidence that organizational frames were deliberately altered and instead appear to have coincidentally changed with other organizational behaviors.

4.4 Influences of Organizational Behavior on Packaging Decisions

The research found that organizational behaviors influence packaging decisions both positively and negatively. Positively influenced decisions produce designs that are considered

optimal by their organizations and in turn mitigate packaging-related corporate risks. Negatively influenced packaging decisions produce designs that are suboptimal or dysfunctional and in turn create packaging-related corporate risks. The cause and effect relationship between organizational behaviors, packaging decision-making, packaging designs, and corporate risks is illustrated in the conceptual model below (Figure 8, for reference only; identical to Figure 7).

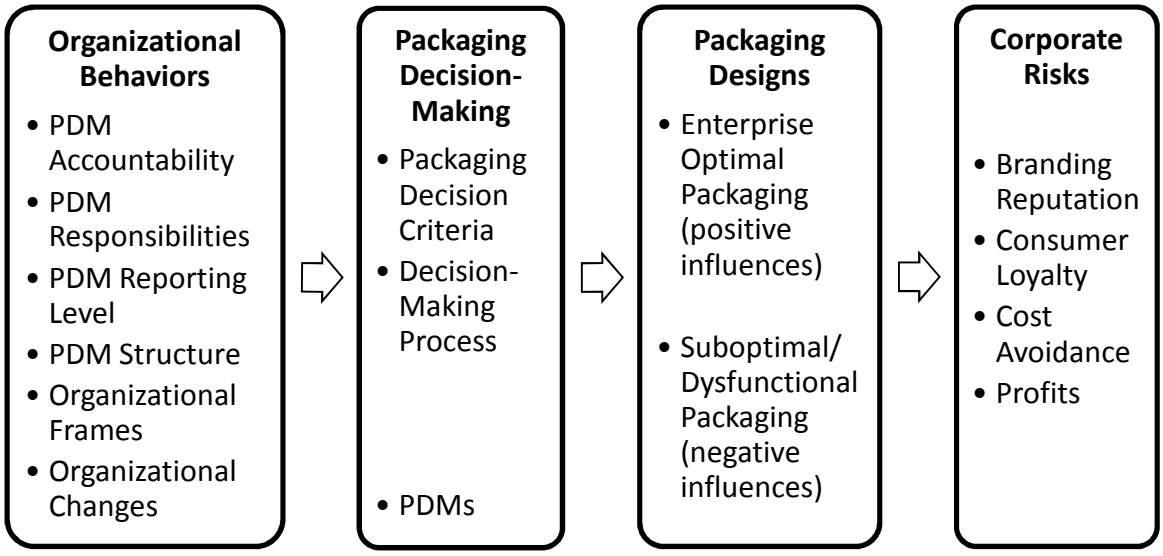

Figure 8. Modified Conceptual Model of Theoretical Relationships (for reference only)

This section presents the findings with respect to the research propositions. It distills embedded case evidence as presented in the "Validation of Theoretical Relationships" sections from the case study appendix (Appendix C).

4.4.1 P_1: The PDM's organizational accountability influences packaging decisions.

There is support found for this proposition.

Evidential support shows that a PDM's organizational accountability can influence packaging decisions both positively and negatively. Regarding positive influences, organizations either strategically align their PDM within the primary activity that is perceived to benefit the

most from packaging decisions or within a supporting activity to enable packaging decisions that are optimal for the entire organization. Regarding negative influences, a PDM that is arbitrarily or not strategically accountable to a primary activity, can over emphasize that activity's packaging requirements resulting in suboptimal and even dysfunctional packaging designs.

Both the positive and negative influences from organizational accountability are demonstrated by the heavy equipment manufacturer's service parts PDM. Historically, this PDM was organizationally accountable to the warehouse function that is a primary activity of the organization. Packaging decisions emphasized the requirements of the warehouse function, such as reducing packaging-related material costs, that over time proved to be dysfunctional by contributing to packaging-related service parts damage. The various costs incurred by the organization to replace the damaged parts proved the decisions to also be suboptimal for the organization. The PDM's organizational accountability negatively influenced packaging decisions and put the corporation's brand at risk and threatened consumer loyalty. The corporation's emerging business strategy, to make service parts packaging to be a competitive advantage, required organizational changes to its PDM's organizational accountability. The current PDM is now accountable to the quality function which is a supporting activity of the organization. This alignment positively influences packaging decisions that holistically include the organization's various packaging needs and has better enabled the pursuit of EOP without the warehousing bias.

For example, the PDM's organizational accountability now enables packaging decisions to be standardized and globally replicated similar to the way that the division's quality function

creates and disseminates quality standards for the entire organization. Evidence of how organizational accountability influences packaging decisions includes the various processes and tools the PDM has implemented to standardize packaging designs and packaging decision-making. These include a packaging information technology (IT) system, standardized packaging work orders, standardized packaging material guidelines and drawings, and standard material specifications.

The heavy equipment and appliance manufacturers strategically altered their assembly components PDMs' organizational accountabilities to create central packaging authorities. Historically, for both, the PDMs were dispersed and organizationally accountable to various activities at different manufacturing locations. The strategy to centralize packaging authority changed their PDMs' organizationally accountability to supply chain functions that are supporting activities for their organizations. For the heavy equipment manufacturer's centralized PDM, this means supporting the supply chain activities of inbound logistics and manufacturing operations. Centralization facilitated the standardization of packaging materials and processes. Packaging information is now disseminated to suppliers enabling "pull" production efficiencies on a global basis. The appliance manufacturer's centralized PDM now supports the supply chain activities of manufacturing operations and purchasing. Standardized returnable containers and the logistics to support them have now eliminated the cost of expendable packaging alternatives and reduced operational costs associated with damaged assembly components.

Similarly the computer manufacturer created a central organization-wide packaging authority to standardize packaging decisions for its various finished goods PDMs. The PDMs

were made organizationally accountable to each product group's operations function. This enabled the new central PDM authority to standardize packaging decision-making throughout the organization. One way that standardized decision-making is accomplished is through the Packaging Management Council (PMC) consisting of PDM managers and specialists from each of the product groups. The PMC designs and deploys standardized packaging decision-making processes, tools, and metrics. One of the standard decision-making "metrics for success" includes packaging-related cost reductions that now annually save the organization millions of dollars.

Both the appliance and automobile manufacturers altered the organizational accountability of its PDMs by eliminating the historical use of external packaging engineers. The appliance manufacturer brought accountability for packaging development and verification back "in house" for its finished goods while the automobile manufacturer did the same for its service parts. These strategic changes occurred because some packaging decisions made by external packaging engineers were suboptimal for their organizations. An informant suggested, "Some [packaging] decisions were not optimized to the total cost of quality when this outside engineering service was involved in the design process. The primary reason for that, the contract service probably did not have full line of sight in consideration of the total cost of quality versus the quality issues." Additionally, "That same resource was also contracted for testing and they really probably valued the poor design to a greater degree and that would experience more testing and that is where they really made their high margin."

While the manufacturers' contracts with packaging services providers relieved them of administrative costs including some PDM personnel, suboptimal packaging designs resulted

because the external packaging engineers were unable to successfully balance the organizations' various packaging requirements. In some cases dysfunctional packaging designs resulted that protected products poorly and negatively impacted customer satisfaction.

The automobile manufacturer altered the organizational accountability of its assembly components PDM several times to deliberately influence packaging designs. PDM accountability moved from the purchasing function to the material handling function to include more organizational requirements than simply controlling packaging costs. This enabled the PDM to participate in the function's value management efforts that monitor the design and cost-effectiveness of assembly components packaging. Then, coincidental with organizational changes to the corporation's joint operating arrangement, the assembly components PDM was made accountable to the organization's product launch group that is integrated in assembly operations, a primary activity. This was strategically done to mirror the organizational accountability of the corporate manufacturing partner's PDMs. The PDM now participates in a cross-functional team that supports a variety of the organization's packaging requirements such purchasing function's need for cost-accountability and operation's need for user-friendliness.

The printing equipment manufacturer strategically reduced operating expenses by eliminating the majority of its packaging decision-making resources, consolidating its assembly components, finished goods, and service parts PDMs into a single PDM authority. The corporate-wide PDM is organizationally accountable to the transportation function, a supporting activity for the entire corporation; whereas, previously the corporation's different PDMs were accountable to various primary and supporting activities. This strategic change not only altered the current PDM's scope, but also reemphasized the contribution that packaging

makes to corporate transportation and logistics. The influence of the PDM's organizational accountability is evident by the PDM's "General Packaging Standard" guidance document. It provides generic packaging design requirements for all assembly components, finished goods, service parts, and consumable supplies "delivered to any manufacturing, distribution facility or end customer, whether from an external supplier or the corporation."

Two cases provide evidence that does not support the proposition. This includes the heavy equipment manufacturer's historical service parts PDM when it was accountable to the warehouse operations function, a primary activity. That PDM's packaging decisions gravitated towards cost reductions that not only emphasized warehouse efficiencies through packaging designs, but also reduced costs for the purchasing function, a supporting activity, by minimizing packaging materials. This suggests that other organizational behaviors influenced the PDM beyond its organizational accountability to warehouse operations. Historical data is limited and does not offer a clear explanation, but relationship-based behaviors potentially influenced the PDM including the negative influences of politically framed organizations. It is known that some individual PDMs were displeased with their leaders who knowingly accepted the packaging-related risks despite being warned. The resulting packaging designs proved to be suboptimal and dysfunctional.

Another example that does not support the proposition is the appliance manufacturer's service parts PDM. The PDM is also organizationally accountable to the warehouse operations function, a primary activity, yet the PDM makes packaging decisions supporting other functions such as inbound logistics, outbound logistics, and purchasing. On average, the PDM saves the organization approximately $450k annually including organizational costs such as warehousing

labor, logistics labor, transportation costs, inventory shrinkage, parts damage, packaging materials, and packaging labor. The PDM's ability to create EOP designs while being accountable to a single primary activity suggests that other factors or organizational behaviors are influencing packaging decisions. Potential influences from other organizational behaviors include the PDM's structure of an individual specialist and the human resource frame's emphasis on personal relationships. The PDM's performance history and working relationships may have enabled the organizational empowerment. The concept of PDM empowerment is further discussed in Chapter 5.

4.4.2 P_2: The PDM's organizational responsibilities influence packaging decisions.

This proposition was supported. But it was also found that responsibilities are strongly related to accountability.

Evidence shows that a PDM's organizational responsibilities can impact packaging decisions both positively and negatively. Regarding positive influences, organizations strategically make their PDMs responsible for a broad range of organizational functions' packaging requirements. Through proper balancing of potentially conflicting packaging requirements, the PDM is better enabled to create optimal packaging for the entire organization. Regarding negative influences, a PDM having limited organizational responsibilities or a narrow organizational focus is hindered in creating EOP and is more likely to create suboptimal or even dysfunctional packaging designs. Both positive and negative influences are demonstrated in organizations that have strategically expanded their PDM's narrow focus to pursue better packaging.

For example, the heavy equipment manufacturer broadened its service parts PDM's responsibilities from just warehouse operations to include other primary activities, such as inbound logistics, and outbound logistics, as well as supporting activities, such as purchasing and marketing. Additionally the PDM considers external entities' packaging requirements such as parts suppliers and consumers. The PDM's broader organizational responsibilities now enable packaging decisions that are better for the organization and minimize service parts damage. Regarding the effects of the PDM's changed organizational responsibilities, an informant describes, "Not that the cost is going away, that pressure is still there, but there was not a huge push to reduce that part stock warranty or damage to the product itself prior to the customer using the product and now that has really been re-energized." This helps fulfill the key corporate strategy to provide timely support for consumers' repair and maintenance of heavy equipment on a global basis. The PDM's broadened organizational responsibilities have resulted in packaging designs that have improved customer satisfaction and loyalty.

The automobile manufacturer's assembly components PDM is another example of expanded organizational responsibilities resulting in better packaging. The PDM's responsibilities were repeatedly expanded to match the organization's emerging business needs and evolving definitions of optimal packaging. The PDM was originally accountable to the purchasing function, a supporting activity, and as such was exclusively responsible for purchasing's packaging requirements, namely low-cost packaging designs. In order to make better packaging decisions, the organization strategically expanded the PDM's responsibilities to include inbound logistics, assembly operations, purchasing, quality, and component suppliers. This shift in packaging design emphasis was described by the PDM, "They thought it

was a good idea [to] move to work on new models directly, [and] work on cost when necessary."

The automobile manufacturer's assembly components PDM's responsibilities again expanded to include assembly line end users, corporate safety, union safety, and the industrial engineering function. Now the PDM's packaging proposals are vetted with all stakeholders prior to implementation to gain concurrence or potential modifications. This is evident by the organization's packaging specification template used by the PDM and the cross-functional team to define packaging designs for specific assembly components. Because each team member must concur with every new packaging design, new packaging specifications require signatures from all of the represented organizational functions. As the PDM's organizational responsibilities expanded over time to include more functions, the packaging specification template has been repeatedly modified to include more signature boxes for the additional organizational functions. These examples illustrate how organizations change PDM responsibilities to influence packaging decisions and create designs that match evolving definitions of optimal packaging.

While organizations strategically change PDMs' responsibilities, these are frequently linked with changes to organizational accountability. This is particularly obvious with strategic organizational changes that centralize, standardize, and consolidate PDMs.

The heavy equipment and appliance manufacturers' strategy to create central packaging authorities altered their assembly components PDMs' organizational responsibilities and accountabilities. Historically the dispersed PDMs were organizationally responsible for various activities with a focus on their local manufacturing facility's packaging requirements. The

central packaging authority strategy not only requires the PDMs to be centrally combined but also gave them broader organizational responsibilities for inbound logistics and assembly operations, both primary activities, as well as the purchasing function, a supporting activity. The PDMs' expanded responsibilities better enable packaging decisions that are more organizationally balanced and optimal.

For the heavy equipment manufacturer, packaging decisions have reduced supply chain costs by: increasing safety and ergonomics; establishing cost effective packaging solutions; improving quality; improving sustainability; and increasing velocity. Regarding safety and ergonomics, the new centralized PDM now instructs assembly facilities and suppliers on "right-sizing" packaging from an ergonomic perspective. This matches components with packaging based on product weight and order quantities.

Regarding cost effective packaging for the heavy equipment assembly components, the organization's centralized PDM strategy included improved visibility of the packaging costs. For example, "98% is buried" in component piece pricing. The organization estimates that as much as 10% of its total material cost was for packaging. The organization determined, through competitive benchmarking of manufacturers, that packaging material costs that are less than 2% of total material cost is "world class." Narrowing the gap between 10% and 2% represents a significant cost reduction opportunity for the organization and could be as much as "over a billion dollars." The organizational change to "create a focused approach on managing packaging" has created two objectives that did not exist for the organization's historical PDMs: "determine supplier packaging costs" and "reduce cost through improved packaging."

Regarding improved quality, the heavy equipment assembly components PDM considers product damage from dysfunctional packaging as a quality issue. For example, battery packaging was historically determined by suppliers or individual assembly facility's PDMs. Typically it consisted of wood pallets, corrugated fiberboard layering sheets, and plastic stretch wrapping. This expendable packaging was susceptible to damage from forklift trucks that occasionally pierced pallet loads. The packaging was dysfunctional in that it did not adequately protect the product upon receipt. More robust and returnable packaging was redesigned by the central PDM authority that minimizes mishandling damage, eliminates the health and safety issues related to hazardous acid spills from broken batteries, and reduced the organization's cost of reworking damage components. The PDM is now able to replace dysfunctional packaging designs with ones that are better for the organization and improve quality.

Regarding sustainability, the heavy equipment assembly components PDM has significantly improved environmental sustainability by increasing the use of reusable shipping containers consistent with the corporation's sustainability goals and brand image. This includes reducing the use of disposable packaging such as corrugated fiberboard cartons in favor of returnable containers and through better accountability of the returnable container fleet. Historically PDMs used the fleet based on component configuration, order quantity, and container availability. The dynamic usage of returnable containers meant that different containers were potentially used from one supplier shipment to the next. The organization did not have visibility to the fleet and was unable to control its resources. Containers would be lost or maldistributed in the supply chain. Container shortages increase the use of expendable packaging alternatives that add avoidable material costs and landfill disposal costs. The

returnable container usage inconsistency inhibits the supply chain function from performing basic logistical tasks such as forecasting container demand and building safe and efficient trailer loads. Without the means of planning container consumption, the organization was at risk of disrupting production operations. The new centralized PDM's guidelines for the proper use of returnable and expendable containers throughout the supply chain has saved the organization avoidable material costs and reduced landfill waste.

Regarding increased velocity, the heavy equipment assembly components PDM supports the corporation's strategic vision of a production pull system and the organization's goal of improved supply chain velocity. The previously described historical use of the returnable container fleet inhibited the flow of components from suppliers through to the various assembly points. There were several opportunities for the organization to better manage its inventory and packaging decisions were an enabling tool. For example, it was not uncommon for suppliers to fill and ship containers with assembly parts regardless of the ordered quantity. While these overages may have appeared to be the judicious use of available space in returnable containers, it led to repacking expenses at the assembly plants as well as storage and carrying costs of unused inventory. The PDM now administers the proper selection of containers by assembly plants and suppliers that reduces the amount of void in containers and improved cube utilization in shipping trailers. Subsequently this lowers freight costs and improves the flow of components through the supply chain. One informant's "best guess" regarding the amount of logistical savings that have already resulted from the PDM's organizational change was simply described in terms of "millions" (of dollars).

For the appliance manufacturer's centralized assembly components PDM, the packaging decision-making process and criteria have been standardized to leverage packaging designs for the entire organization. Historically the dispersed PDMs were primarily focused on their local plant's manufacturing needs. An informant described the packaging decision focus as, "Previously 100% manufacturing with an annual review." Evidence of the centralized PDM's expanded organizational responsibilities is a standard decision criteria tree. This decision-making tool provides balance to the organization's often competing packaging requirements by prioritizing them. Per the PDM manager, "The criteria leans more towards manufacturing, then logistics, then purchasing." The PDM's organizational responsibilities have been "formalized" and packaging decisions now better benefit the entire organization.

The computer manufacturer's strategy to standardize packaging decisions for its various finished goods required PDMs to uniformly have broader organizational responsibilities as well as changes to the PDMs' organizational accountabilities. Now each product groups' PDM is organizationally responsible for primary activities' such as manufacturing and outbound logistics, as well as a variety of supporting activities, such as marketing, purchasing, and quality. The organization's Packaging Management Council developed and deployed a cost model, known as the "Supply Chain Opportunities Summary", that uniformly represents the PDMs' organizational responsibilities. New product and proposed packaging data are entered into the model. Known packaging material and transportation costs are applied so that the various organizational costs of potential packaging design are summarized. The summary becomes part of a standard packaging "Plan of Record". A drafted plan of record is developed for every new

product and vetted with each organizational function that the PDM is responsible for. This gains stakeholder concurrence or any necessary design changes prior to implementation.

The printing equipment manufacturer's strategy to consolidate its assembly components, finished goods, and service parts PDMs altered organizational responsibilities and accountabilities simultaneously. Previously the different PDMs had various organizational responsibilities but the new corporate-wide PDM has organizational responsibilities for primary or supporting activities including inbound logistics, assembly operations, outbound logistics, purchasing, and marketing. The PDM's new responsibilities enable better packaging designs. This is demonstrated in the PDM's "Standard Packaging Guide" that standardizes and prioritizes the corporation's packaging design requirements such as safety and costs. The guide includes a *packaging decision tree* specifically for service parts that emphasizes packaging having the least cost while still performing to corporate and consumers' expectations.

The influence that organizational responsibilities have had on packaging decisions is also evident where organizations strategically eliminated their use of external PDMs. Both the automobile manufacturer's service parts PDM and the appliance manufacturer's finished goods PDMs at least occasionally used third-party service providers to make packaging decisions. While this practice reduced some of the organizations' overhead costs, the third-party PDMs more commonly created suboptimal and even dysfunctional packaging designs. The strategic reversal to eliminate external PDMs broadened the internal PDMs' organizational responsibilities. Regarding the automobile manufacturer's service parts, packaging decisions that historically benefited third-party service providers by emphasizing packaging operational capabilities now instead reflect the packaging requirements for inbound logistics, distribution

operations, purchasing, and dealerships. Evidence of the positive influences from the PDM's broadened organizational responsibilities includes the significant reduction of damage claims made by dealerships. Five years ago, when the third-party service provider's contract was restructured, the corporation's customer satisfaction rating for service parts was "worst in class" based on annual surveys of US automobile dealerships' service parts managers. The automobile manufacturer is now "above average" with respect to the last service parts managers' satisfaction survey.

Regarding the appliance manufacturer's finished goods, packaging decisions now consider the requirements of assembly operations, outbound logistics, purchasing, quality, trade partners, retailers, and consumers. The influence of these diverse organizational responsibilities is demonstrated in the organization's quality function deployment (QFD) process that captures "specific requirements to designs and technologies." The finished goods PDM uses the QFD process to fulfill its organizational responsibilities and make EOP decisions for each new appliance.

No evidence was found that contradicted the proposition.

4.4.3 P_3: The PDM's organizational reporting level influences packaging decisions.

This proposition was supported. But it was found that reporting levels strongly relate to structures.

A PDM's organizational reporting level can influence packaging decisions both positively and negatively. Supporting evidence indicates that this variable is often manipulated to

influence packaging decisions in response to emerging strategies and can coincide with other organizational behavior changes.

Assembly components PDMs' reporting levels were changed as part of the heavy equipment and appliance manufacturers' centralization strategies. Historically both organizations' PDMs were not only dispersed but they were non-management role. In order to better empower the new PDMs to make packaging decisions on behalf of their entire organizations, they were organizationally elevated to management reporting levels. These changes have empowered the PDMs to fulfill their organizations' strategies through better packaging decisions. The heavy equipment PDM now reports to the supply chain director and is empowered with authority for all manufacturing facilities. Evidence of this organizational influence includes the PDM's management of the "Global Packaging Council" as well as annual packaging and training workshops for suppliers and assembly facilities. For the appliance manufacturer, empowering the PDM enabled the cost of returnable packaging to shift from the organization and be shared with component supplier partners. This directly supports the procurement function by reducing the organization's overall packaging costs as well as the inbound logistics function by standardizing component racking designs that maximize cube utilization in trailers.

The computer manufacturer's standardization strategy deliberately altered their finished goods PDMs' organizational reporting levels. Historically the PDMs in different product groups were non-management but now have management reporting levels. These hierarchical elevations empower the PDMs to better make packaging decisions that are better for their product groups. Evidence of the influence from the PDM's reporting level includes the

development of “engineering standards” for common packaging materials such as corrugated fiberboard boxes. Standard packaging material specifications enable: the purchasing function to leverage and reduce material costs; manufacturing efficiencies through standardized handling and assembly instructions; and transportation and logistics savings through planning using well defined package data.

The heavy equipment manufacturer’s service parts PDM has a management reporting level whereas the previous PDMs were non-management. The historically lower reporting levels contributed to PDMs creating suboptimal and dysfunctional packaging. The non-management PDMs were unable to convince their organizational leaders about the potential risks of packaging decisions that emphasized cost savings over performance. The resulting suboptimal and dysfunctional packaging designs directly put consumers’ loyalty and the corporation’s brand reputation at risk.

For example, the packaging of engine braking actuators were historically problematic because the service parts were complex, heavy, and fragile. Organizational leaders considered the cost to eliminate the dysfunctional packaging to be prohibitive compared to the avoidable warranty expenses being incurred. After years of customer complaints and eroding customer loyalty, the organization reconfigured its PDM. Multiple packaging designs for actuators were created and tested before better packaging was found. The cost analysis found that the annual incremental packaging costs were less than 50% of the annual warrantee expense.

The heavy equipment manufacturer made strategic organizational changes that included elevating the service parts PDM’s reporting level once it became aware of how severe its packaging problems were through customer feedback and damage claim data. Only then did

packaging decisions improve for the entire organization and its consumers as demonstrated by significantly lower damage claims. In 2008 the organization incurred nearly $25M in service parts warranty claims that include dysfunctional packaging. Since the organization reconfigured its PDM, annual claim costs have been reduced by over 25%. As an informant described it, “This is when we did the full integration of Packaging into the organizational structure that considers a more holistic approach to the business from design all the way to customer shelf.”

Of note, the heavy equipment service parts PDM’s elevated reporting level accompanied organizational changes to the PDM’s accountability and responsibilities as previously described. For this embedded case, it is not possible to determine which, if any, changed variable had more influence on packaging decisions than other variables. But the evidential gap does not contradict the proposition.

No other evidence was found to contradict the proposition.

4.4.4 P_4: The PDM’s organizational structure influences packaging decisions.

This proposition was supported. But it was found that structures are strongly related to reporting levels.

Evidential support shows that a PDM’s organizational structure can influence packaging decisions both positively and negatively. Regarding positive influences, organizations strategically structure their PDM as a group, team, or department to match decision-making workload and pursue EOP designs. Organizations may strategically structure their PDMs according to workloads. An organization’s PDM may be structured as a single individual packaging specialist if there are comparatively fewer packaging decisions required; whereas,

organizations having comparatively larger or more complex packaging decisions may structure their PDM as a full department. Regarding negative influences, a PDM's structure can introduce packaging-related risks if decision-making workload or scope of responsibilities exceeds the capacity or empowerment of its human resources.

Examples of both positive and negative influences come from the heavy equipment and appliance manufacturers' assembly components PDMs whose organizational structures were changed as part of centralization strategies. Historically both organizations' PDMs were configured as dispersed and independent individuals. The individual PDMs were only able to make packaging decisions that satisfied the packaging needs of their local manufacturing sites at best. Now the centralized PDMs are structured as a team tasked with making packaging decisions for all manufacturing locations. This is better for their organizations as a whole. For the heavy equipment manufacturer, the PDM team has the necessary resources and authority to perform strategic packaging projects such as the development and implementation of a new packaging specification system. This enables the organization's pull production strategy. For the appliance manufacturer, the PDM team resources and authority has enabled the design and mandatory use of a returnable container fleet for assembly components. This has reduced packaging material costs.

The computer manufacturer's strategy to standardize packaging decision-making for its various finished goods groups caused the PDMs' organizational structures to be changed from individual packaging specialists to PDM departments. This was done to add packaging decision-making resources to each product group and better enable them to make better packaging decisions. While the strategy enables packaging designs to be more uniformly created for each

product group, the departmental structure empowers PDM managers to allocate and prioritize their resources according to each product group's unique needs. Additionally the departmental configuration makes individual PDM specialists less susceptible to from potentially negative influences from other organizational functions including those at the interpersonal relationships level.

Organizations change PDM structures from individuals to groups, or from small teams to larger departments, by adding PDM resources in response to growing workloads and changing strategies. This was evident with the automobile and heavy equipment manufacturers' service parts PDMs. The historical automobile manufacturer's PDM was structured as an individual, but due in part to corporate growth, a PDM group was formed that included three individuals. The new structure improved packaging decisions by enabling the PDM group to keep pace with incremental workload and maintain the same quality of decision-making. The heavy equipment manufacturer's PDM began as a small group but expanded to a departmental structure having two distinct task-centric groups, specifications and materials, each with its own manager as well as a PDM department manager. The PDM structure not only influences packaging decisions with standardized tools and procedures, the PDM's materials group is tasked with researching and developing new packaging materials. This demonstrates the organization's proactive pursuit of EOP.

In the case of the printing equipment manufacturer that consolidated its various PDMs, organizational structures have maintained the group configuration while reducing the number of PDM groups. The three different PDM commodity groups were consolidated to one for the entire organization. Of particular note, the quantity of PDM resources were simultaneously

reduced by approximately two-thirds even though the packaging decision-making workload did not decrease. This creates packaging-related risks for the corporation.

The risk is evident by an example of dysfunctional packaging created during the structural transition. An individual PDM in the new consolidated PDM group "took a shortcut" and did not fully test a new finished goods packaging design. The reason for this was due to the individual's increased workload associated with the consolidation of PDMs. The PDM specialist made assumption about the new packaging design based on historical performance of similar product packaging. After implementation the packaging design proved to be suboptimal because stacking failure began occurring in the distribution environment. While the dysfunctional packaging design is attributable to the individual PDM's decision-making error, the organization enabled this scenario by making incorrect assumptions about workload during the PDM consolidation restructuring. An informant described the transition, "Groups were combined and there was too much work to do and the focus wasn't where it needed to be."

Another structural change worth noting is related the repeated expansions of the automobile manufacturer's assembly components PDM function. The number of members of the PDM's cross-functional team has increased several times. This was deliberately done to introduce additional organizational responsibilities to the packaging decision-making process as the definition of optimal packaging evolved.

Commonly organizations strategically change PDMs' structures and reporting levels simultaneously. For example, the structural change from an individual PDM to a department is often accompanied with an elevated reporting level due to adding a new PDM manager. The simultaneous manipulation of PDMs' organizational reporting levels and structures happens

when a PDM department having a manager is replaced with a non-management individual PDM. This lowers the PDM reporting level from management to non-management coincidental with the department to individual structure change.

The appliance manufacturer's service parts organization demonstrated the relationship between reporting level and structure when it changed the structure of its PDMs, from a non-management individual to a department having a manager, and back again to a non-management individual *twice* in a fifteen year period. The repeated changes resulted from the organization's leadership oscillating between cost-reduction strategies. One strategy emphasized packaging-related savings, such as material and labor costs, while another emphasized reducing organizational overhead costs such as the PDM's human resources. PDM staff expansions enabled the review of existing packaging designs for potential revisions that reduced various organizational functions' costs, whereas staff reductions enabled organizational leaders to reduce overhead costs associated with having fewer human resources. Of note, the organization's leadership assumes that packaging decisions made after staff reductions will continue to be optimal and that organizational risks resulting from potentially suboptimal and dysfunctional packaging designs are nominal. But this assumption is not always accurate and the corporation incurs risks due to the PDM's lower reporting level and reduced organizational structure.

An informant described the risks resulting from the PDM's restructuring and subsequent suboptimal packaging designs. "Failures occur when we get involved very late in the program and this has happened on occasion for one reason or another. Therefore we cannot design in as much value to either the product or the pack in total cost and quality or damage. So we end up

literally putting band-aids on our product to behave as packaging and we are less successful in protecting the product at that point in time. Typically the costs are a little bit higher as well. We had to loop back or go back and redesign a package to a more optimum state at a later point in time." The organization's cyclic strategies and resulting changed organizational behaviors demonstrate how PDMs' organizational reporting levels and structures influence packaging decisions.

No evidence was found that contradicted the proposition.

4.4.5 P_5: The PDM's organizational frames influence packaging decisions.

This proposition was supported. But it was found that this variable is rarely altered deliberately.

PDMs' organizational frames were found to influence packaging decisions both positively and negatively. Supporting evidence for this relationship-based variable indicates that frames are rarely changed intentionally by organizations and that they instead change as the result of emerging organizational strategies that altered other organizational behaviors. For this reason it is difficult to isolate frame influences from other deliberately changed variables. Compounding the analytical problem is the limited historical data regarding frames prior to organizations' strategic changes.

Examples of both positive and negative frame influences come from organizations that strategically centralized their packaging decision-making authority, such as the heavy equipment assembly components and service parts PDMs as well as the appliance manufacturer's assembly components PDM. Each of these PDMs identified the negative

influences of the previous politically framed working environments. An informant described the PDM's historical work environment as having "no standards", "no consistent solutions", and "no visibility to business units' solutions." The politically framed organizations hindered PDM employee input in favor of power-based decision-making that commonly produced suboptimal and even dysfunctional packaging designs.

These PDMs now identify with the positive influences of their organizations' new human resource frame that emphasizes employee needs, skills, and relationships. For heavy equipment assembly components, packaging decisions are influenced by individual PDMs' expertise. Therefore, "building individual expertise" is one specific object of the organization's "Production Center of Excellence Packaging Vision." For heavy equipment service parts, the packaging decisions made by PDMs at packaging locations are influenced by their feelings of being part of an *extended family*. These "extended family members" are geographically dispersed but remain accountable to the central packaging department. The organization's human resource frame positively influences individual PDMs by reaffirming that they are part of a larger group regardless of their location. This minimizes organizational influences that could arise at remote locations and negatively influence packaging decision-making. The organization's human resource frame motivates its PDMs to perform decision-making tasks in accordance with established processes and criteria.

For appliance assembly components, packaging decisions are influenced by a familial corporate culture having an overarching commitment to the organization's needs as a whole. A PDM self-described this as being "empowered to execute packaging" for the organization.

The influences of organizational frames were evident in organizations that strategically eliminated their use of third-party PDMs, the automobile manufacturer for service parts and the appliance manufacturer for finished goods. These organizations' now exhibit human resource frame characteristics that have positive influences on packaging decisions. One individual PDM said, "My boss allows me to do my job and supports me." These PDMs' working environments emphasize the value that employees bring to their organization including interpersonal working relationships. One PDM described working environment as "a family in that it is more of a team sport because of the interaction with the different functions." This shows the relationship-based interdependencies of PDMs with other organizational functions as they pursue EOP.

While PDMs' organizational frames often change simultaneously with other strategically altered organizational behaviors, the influences of frames are evident in organizations independent of other changing organizational behaviors. This is evident in cases where PDMs already have frames that positively influence packaging decisions, such as the automobile manufacturer's PDMs and the printing equipment manufacturer's corporate-wide PDM. In the case of automobile manufacturer, the assembly components and service parts PDMs have always relied on cross-functionally collaborative working environment to produce EOP despite several changes in their organizational responsibilities and structure. In a reference to the organization's structural frame, specifically the frame metaphor of a machine, the assembly components PDM described the collaborative decision-making environments as being "like clockwork". Similarly the automobile service parts PDM related to the structural frame's

machine metaphor because, “We function like a machine with all parts doing there required tasks.”

In the case of the printing equipment manufacturer, the strategy to consolidate its various PDMs did not alter their previous human resource frame characteristics or their current ability to make collaborative packaging decisions. The PDM manager stated, “We are very much empowered. In other words, my manager has little knowledge of what we do. He allows me to run it as I see fit… he’s very hands-off.” This indicates the positive influences a work environment where organizational and human needs are aligned.

A central theme that emerged from the research is that negative influences on packaging decisions can temporarily arise during the shifting of decision-making authority in politically framed organizations. This was most evident in cases where PDM authority was centralized. For example, the appliance manufacturer centralized its various dispersed assembly components PDMs. This was met with resistance from some manufacturing locations because they no longer controlled packaging decision-making. Their loss of power, a key characteristic of politically framed organizations, at least temporarily undermined the new central PDM’s authority and potentially damaged future working relationships. This highlights risks associated with changing corporate cultures and is further explored in the next chapter.

PDMs demonstrated the positive influences of structural and symbolic organizational frames but less commonly than human resource framed organizations.

No evidence was found that contradicted the proposition.

4.4.6 P_6: Organizational changes influence PDMs.

This proposition was supported.

It is clear from the previous proposition discussions that organizational changes influence PDMs and their packaging decisions. The research finds that changes are often made to directly manipulate a PDM's organizational accountability, responsibilities, reporting level, and structure, as discussed in the previous sections on P_1, P_2, P_3, and P_4, respectively. Organizational changes that positively influence PDMs often better enable EOP to be designed while some organizational changes can negatively influence PDMs and result in suboptimal and dysfunctional packaging types. The majority of evidence indicates that deliberate organizational changes positively influence PDMs but some evidence indicates that organizational changes can have unintended negative influences on PDMs. These enable the creation of suboptimal and dysfunctional packaging designs that in turn introduce risk to corporations such damaged brand reputation and incurring avoidable costs.

The heavy equipment manufacturer's service parts embedded case demonstrates how organizational changes can both positively and negatively influence PDMs. Historically the PDM was subjected to organizational changes that, in some cases, created corporate risks. This included making the PDM organizationally accountable to the warehouse operations function, a primary activity. While the intention was to strategically enable the PDM to pursue better packaging designs with a focus on warehousing efficiencies, the results had unintended consequences over time. Ultimately, low-cost packaging decisions produced suboptimal and dysfunctional packaging types that put the corporation's consumer loyalty and brand

reputation at risk. In response to the discovered risks, strategic organizational changes were made that altered the PDM's accountability, responsibilities, reporting level, structure, and coincidentally its frames. The PDM is now accountable to the quality function that is a supporting activity for the organization. Responsibilities have been broadened to include inbound logistics and marketing functions as well as external entities such as suppliers and consumers. The PDM was organizationally elevated to a management reporting level. The PDM's structure was changed from a small group to a larger department having two groups with mangers. The service parts PDM now routinely makes better packaging decisions and has successfully mitigates packaging-related risks. This case demonstrates how organizational changes can positively influence PDMs, resulting in EOP, or and negatively influence PDMs, resulting in suboptimal and dysfunctional packaging.

This embedded case example of changes that influence PDMs is not unique. Other supporting examples are detailed in the previous proposition discussions. No evidence was found that contradicts the proposition.

The embedded cases highlight the need to proactively manage packaging-related risks associated with organizational change such as lost profits and damaged brand reputations. These are further explored in the next chapter.

CHAPTER 5. CONCLUSIONS

This chapter summarizes the research and findings. Recommendations for organizational management of packaging are then presented, followed by the research limitations, and recommendations for future research.

5.1 Summary of Research

The research addressed the question: "How does organizational behavior influence packaging decisions?" A theoretical approach was used to explore structure-based and relationship-based organizational behaviors through Value Chain Modeling and Framing Theory. Five research propositions advance that the organizational behavior variables of PDM accountability, responsibilities, reporting level, structure, and organizational frames influence packaging decisions. A sixth proposition advances that organizational changes directly influence PDMs. A conceptual model of theoretical relationships was constructed to illustrate how the influences of organizational behavior produce optimal, suboptimal, or dysfunctional packaging types and ultimately mitigate or create various corporate risks

A case study research approach was used to study durable goods manufacturers so that embedded case data of their assembly components, finished goods, and service parts PDMs could be intra-case and inter-case compared. This was in part because the literature review found that broad survey data and focused case study data had not produced generalizable findings regarding how organizations ideally manage packaging and packaging decision-making. On the other hand, the findings of this exploratory research are significant in describing how organizational behavior can positively or negatively influence packaging decisions, either intentionally or otherwise, that subsequently mitigate or create corporate risks.

5.2 Analysis of Findings

This section summarizes the research findings including support for the conceptual model of theoretical relationships. Although the research variables are presented individually, the simultaneous manipulation of multiple organizational behaviors is discussed. This is because the research indicates that deliberate changes to different organizational behaviors are rarely isolated and commonly several are altered simultaneously.

The organizational accountability variable is shown to both positively and negatively influence packaging decisions. Generally, PDMs that are accountable to supporting activities like quality control are better enabled to design packaging that is deemed optimal by their organizations. This is because the nature of supporting activities is to provide support for multiple functions within an organization. In turn, optimal packaging minimizes corporate risks to brand reputation, enhances consumer loyalty, avoids costs, and supports profits. Conversely, PDMs that are organizationally accountable to specific primary activities like assembly operations are more likely to make suboptimal packaging decisions. This is due to the primary activity's narrow focus and an activity-centric definition of optimal packaging. The resulting suboptimal or even dysfunctional packaging designs can create corporate risk in the form of damaged brand reputation, reduced consumer loyalty, incurred avoidable costs, and reduced profits.

Likewise, the organizational responsibilities variable is shown to both positively and negatively influence packaging decisions. Generally, PDMs that have broad ranges of organizational responsibilities, such as purchasing, inbound logistics, and assembly operations, are better enabled to design optimal packaging for their organizations' diverse needs.

Conversely, PDMs that have limited organizationally responsibilities, such as assembly operations only, are inhibited or incapable of making decisions that benefit the entire organization. The corporate risks that are rooted in PDMs' organizational responsibilities are identical to those described in the conceptual model of theoretical relationships: Damaged brand reputation, diminished consumer loyalty, incurred avoidable costs, and reduced profits. The consistency of the cause and effect relationships for organizational accountability and responsibilities is the first indication of why these two variables are often simultaneously manipulated by organizations.

The findings show that PDMs' accountabilities and responsibilities are commonly manipulated at the same time by organizations to improve packaging decision-making. This is particularly demonstrated by organizational changes resulting from evolving business strategies, such as centralizing dispersed PDMs or standardizing packaging decision-making criteria and processes. In the cases having centralization strategies, organizationally dispersed and unaffiliated PDMs are generally made accountable to a supporting activity. This coincides with the organization's requirement to broaden PDMs' responsibilities. Accountability to an activity that already supports a variety of primary activities, such as a quality function that supports inbound logistics and assembly operations, further broadens a PDM's responsibilities. Additional organizational responsibilities can readily be given to a centralized PDM that is accountable to a supporting activity. This increases the PDM's organizational scope for decision-making and leads to better packaging.

The organizational reporting level variable is shown to both positively and negatively influence packaging decisions. PDMs that have management reporting levels, compared to

those having non-management reporting levels, are generally better enabled to create EOP designs. This is due in part to their comparatively higher hierarchical status in the organization. This empowers PDMs to better pursue better packaging on behalf of the entire organization and subsequently minimizes various corporate risks. Conversely, PDMs that do not have management reporting levels are generally more inhibited in creating packaging that is optimal for the entire organization. This is due to their lack of organizational authority and visibility to their organization's diverse packaging needs and subsequently introduces packaging-related risks to organizations.

The organizational structure variable is shown to both positively and negatively influence packaging decisions. Generally, PDMs that are structured as teams, groups, or departments are better enabled to create EOP designs than a PDM structured as an individual. Workload capacity is an important factor that inhibits an individual PDM from consistently making optimal packaging-decisions. PDMs structured as departments are generally enabled to deploy resources for packaging related to projects such as creating material standards.

PDMs' organizational structures and reporting levels are strongly correlated to each other. This is demonstrated by organizational strategies that result in new PDM departments having PDM managers. This hierarchically elevates the PDM and adds organizational clout by virtue of the amount of human resources. These two behaviors in tandem can better empower PDMs to pursue better packaging.

While behavior variables are commonly paired together as described above, some strategies result in all of the variables being manipulated at the same time. For example, the centralized PDM strategy commonly manipulates PDMs' accountability, responsibilities,

reporting levels, and structures simultaneously. The centralization strategy results in a PDM department having a manger that is accountable to a supporting activity with broad packaging design responsibilities. This type of reorganization is done to better enable a central PDM to pursue optimal packaging designs that were not possible through decentralized PDMs.

The organizational frames variable is shown to both positively and negatively influence packaging decisions. Generally, PDMs that work in organizations having human resource frame characteristics are better enabled to create packaging that is optimal for the organization. This is due to the value placed on human resources and their contributions by their organizations. Conversely, PDMs that work in politically framed organizations are more inhibited in creating packaging that is optimal for the entire organization. This is in part due to decisions that are less collaborative and are more influenced by authority. These decisions enable suboptimal and dysfunctional packaging designs that introduce corporate risks. There is little evidence to suggest that organizations deliberately manipulate PDMs' frames. This suggests that the organizational framing variable is underutilized by organizations that strategically seek better packaging decisions.

The organizational changes variable is shown to directly influence PDMs by manipulating one or more organizational behavior variables due to emerging business needs or strategies. Some business strategies that impact PDMs include sustainability, pull production, brand protection, and business growth as well as various business needs such cost reduction initiatives focused on packaging materials, labor, warehousing, and logistics. Other strategic organizational changes that are specific to PDMs include: centralization of resources; centralization of authority; standardization of decision-making criteria, processes, and tools;

expansion or consolidation of resources; and outsourcing or insourcing decision-making. Some of these strategy-prompted organizational changes enable the intended results of reducing risks through better packaging while others have unintended consequences that introduce corporate risks due to unanticipated suboptimal and dysfunctional packaging. Unintended consequences that result from organizational changes indicate leadership gaps in packaging-related risk awareness. This is discussed in more detail in the Recommendations for Packaging Management section of this chapter.

It must be noted that although the manipulations of the variables described above generally result in EOP designs, findings show that these are not necessarily prerequisites for organizational success. The exceptions found in the cases are further discussed in the Future Research section of this chapter.

5.3 Recommendations for Packaging Management

The intention of the exploratory research is to create a better understanding of organizational behavior influences so that corporations can better manage packaging decision-making. The results show how various organizational behaviors are strategically manipulated to produce better packaging designs that benefit the organization. Such examples include tangible savings worth millions of dollars as well as intangible benefits such as improved customer satisfaction and consumer loyalty. This shows that corporations can effectively manage packaging given the strategic awareness of opportunities matched with proper organizational behaviors. Conversely, the results show that some organizational behaviors can have unintended consequences that are detrimental to the organization.

The findings are not prescriptive because each organization has different packaging requirements. This is exemplified by intra-case comparisons of PDMs that have dramatically different organizational behavior characteristics yet are enabled to pursue EOP for their corporation's different commodities. In short, what organizationally makes one PDM successful does not necessarily ensure another PDM's success even in the same corporation. This affirms the previous research on packaging management and the limited generalizability of findings.

Awareness of how organizational behavior can have both intended and unintended consequences is applicable to packaging management and in this way research findings are generalizable.

This section continues with recommendations for packaging management based on the different types of organizational PDMs. This is followed by recommendations based on the thematic strategies that were found.

5.3.1 Recommendations for Different PDM Types

The next three sections include recommendations for assembly components, finished goods, and service parts PDMs with respect to the research variables. These recommendations describe the variables commonly found in the research that enable PDMs to effectively create optimal packaging, as defined by their organizations.

5.3.1.1 Recommendations for Assembly Components PDMs

Effective assembly components PDMs are: accountable to a supporting activity; have responsibilities that span the internal functions of inbound logistics, assembly operations, purchasing, quality, and externally include component suppliers; have a management reporting

level; structured as a group, team, or department; and operate in an organization having human resource frame characteristics.

The recommendations reflect the nature of assembly components. Assembly components require PDMs to be engaged with suppliers at the beginning of the supply chain as well as organizational functions associated with the *front* of the organization's value chain, such as inbound logistics and assembly operations. While PDM accountabilities include entities having diverse titles like "Global Supply Chain", "Supply Team", and "Transportation", the key characteristic is that of a supporting activity (i.e. not a primary activity) that interfaces with suppliers. This enhances the PDM's range of responsibilities to further include purchasing and quality functions. Multiple manufacturing locations necessitate a central PDM staff having its own manager. This structure and reporting level enhances the PDM's organizational authority over individual PDMs potentially located at manufacturing sites. Organizationally collaborative packaging decision-making necessitates the organization exhibit human resource frame characteristics that emphasize individuals' contribution to their organization and relationships to others.

5.3.1.2 Recommendations for Finished Goods PDMs

Effective finished goods PDMs are: accountable to a supporting activity; have responsibilities that span the internal functions of assembly operations, outbound logistics, purchasing, quality, and externally include the needs of retail partners and consumers; have a management reporting level; structured as a group, team, or department; and operate in an organization having human resource frame characteristics.

Finished goods PDMs have *very* similar organizational characteristic to assembly components PDMs. The differences reflect the nature of the distinctly different commodities and their *locations* in the supply and value chains. While assembly components include upstream suppliers and emphasize the *front* of the organization's value chain, finished goods include downstream retail partners and consumers at the end of the supply chain with an emphasis on the *back* of the organization's value chain. The primary activity of assembly operations is the *pivot point* and therefore is pertinent to both PDMs.

The nature of finished goods requires PDMs to be engaged with retail partners and consumers as well as organizational functions associated with the back of the organization's value chain, such as assembly operations and outbound logistics. While PDM accountabilities include entities having diverse titles like "Product Development" and "Transportation", the key characteristic is that of a supporting activity (i.e. not a primary activity) that interfaces with consumers. This enhances the PDM's range of responsibilities to include warehouse and distribution operations as well as the purchasing and quality functions. The remaining organizational attributes of effective finished goods PDMs are identical to those of effective assembly components PDMs.

5.3.1.3 Recommendations for Service Parts PDMs

Effective service parts PDMs are: accountable to a supporting activity; have responsibilities that span the internal functions of inbound logistics, warehouse operations, outbound logistics, distribution operations, purchasing, quality, and externally include suppliers, retail partners, and consumers; have a management reporting level; structured as a

group, team, or department; and operate in an organization having human resource frame characteristics.

Service parts PDMs have *very* similar organizational characteristic to assembly components and finished goods PDMs but they differ based on the nature of service parts as it relates to entire supply chains. Service parts come from upstream suppliers. The act of packaging service parts can be done externally by contract packaging suppliers or by internal packaging operations. Packaged parts can be warehoused internally and distributed through the organization's distribution networks or externally through common carriers. Service parts are sold to authorized repair partners and consumers at the end of the supply chain.

The nature of service parts requires PDMs to be organizationally engaged with upstream and downstream elements of the organization's supply chain as well as the organization's entire value chain. This predisposes effective PDMs to be organizationally accountable to a supporting activity having broad organizational responsibilities. Empowerment through a team structure having its manager is preferable. Working environments should have human resource frame characteristics that lead to collaborative decision-making.

5.3.2 Centralized Packaging Decision-Making Strategy

Some of the most significant implications for packaging management are revealed by the results of organizational strategies that include centralizing packaging decision-making, consolidated PDMs, and outsourced packaging decision-making. Additional implications for packaging management are demonstrated by organizations that: lack the three types of corporate PDMs; make frequent strategic changes; change corporate culture; and mitigate packaging-related risks through awareness.

The strategy to centralize packaging decision-making can yield significant benefits to an organization. Centralizing assembly components PDMs who are dispersed or unaffiliated can significantly benefit inbound transportation and operations activities as well as suppliers. Centralizing finished goods PDMs can benefit assembly operations, warehousing, outbound transportation activities as well as consumers. Centralizing service parts PDMs can benefit all of the aforementioned activities and external entities. Supporting activities such as purchasing can benefit from a centralized packaging decision-making strategy regardless of the product commodity or the type of PDM. Packaging-related efficiency improvements and cost reductions are contingent on the central PDM's authority to standardize packaging decision processes, criteria, tools, and materials. For organizations that are unable to physically centralize their PDMs due to multiple and remote locations, a standardized packaging decision-making strategy may suffice. Regardless of a centralization or standardization strategy, the PDM's authority is enabled by manipulating the organizational behaviors that result in an organizationally empowered PDM.

Recommendations for corporations considering a centralized packaging decision-making strategy for any of their different PDM types include all of the research variables in order to be effective. The central PDM should be organizationally accountable to a supporting activity. This is particularly important for PDMs having dispersed human resources such as those located at various manufacturing locations. The central PDM should have organizational responsibilities for all primary activities and external entities related to their particular commodity, such as suppliers, inbound logistics, and operations for assembly components. Supporting activities such as purchasing and quality should be included in the central PDM's organizational

responsibilities. The PDM should be organizationally empowered through a management reporting level because decentralized PDMs often do not have management reporting levels. The central PDM should be structured as a team or department due to centralizing the workload previously done by decentralized resources. Additionally the central PDM should have the resources to standardize decision-making processes, criteria, tools, and materials. The PDM's organizational frames should foster the new centralized authority and a collaborative working environment by emphasizing the familial value of its human resources. More structured and inspirational working environments can further enable the central PDM to create EOP.

Few negative consequences were found that result from the centralization strategy. But no organizational change is without risks. The risks and consequences of strategic changes are discussed later in this chapter.

5.3.3 Consolidated Packaging Decision Maker Strategy

The strategy to consolidate assembly components, finished goods, and service parts PDMs into a single corporate-wide PDM authority is much different than the centralized packaging decision-making strategy. This strategy can reduce costs as well as introduce potentially costly risks.

The case having a single PDM launched its consolidation strategy over ten years ago, and according to the single corporate-wide PDM manager, this organizational configuration "works well for the most part." The strategy resulted in cost reductions associated with fewer packaging decision-making human resources and fewer fixed assets such as package testing equipment and laboratories. At the same time, the consolidation strategy required the

corporation to accept a certain amount of packaging-related risks directly related to having fewer PDM resources to perform the same decision-making workload. The consolidation strategy required the PDM to publish guidelines for decision-making by empowered assembly components and service parts suppliers. Occasionally, suboptimal and dysfunctional packaging is discovered and requires the PDM to become directly involved to resolve packaging-related problems. Because these incidences occur after packaging designs are implemented, the corporation accepts a certain amount of risk from its reactionary approach to ensuring optimal packaging. These risks are occasionally realized in the form of damaged products and lost productivity. Because the consolidated PDM strategy has been in practice for ten years, it must be assumed that the risks are acceptable compared to the expense of proactively making all packaging decisions with incremental PDM resources. This case further demonstrates why findings from packaging management research are not readily generalizable.

Corporations that are strategically considering the consolidation of their PDMs should perform due diligence regarding all of the research variables in order to be successful or at least minimize the risk. The corporate PDM should be organizationally accountable to a supporting activity that works with as many primary activities as possible due to the nature of assembly components, finished goods, and service parts. The PDM should have organizational responsibilities for all primary activities and a very broad range of supporting activities due to the expertise required to make packaging decisions for all commodities. The PDM should be organizationally empowered through a management reporting level. The PDM should be structured as a team or department with enough resources to minimize packaging related risks to a level deemed acceptable by the corporation. The PDM's frames should reflect the value of

its human resources and potentially inspire them through individual empowerment in a collaborative working environment.

5.3.4 Outsourced Packaging Decision-Making Strategy

The strategy to outsource packaging decision-making has serious implications for packaging management. Outsourcing can produce organizational savings in the form of reduced human resource and other overhead costs. This assumes that the contracted service provider's compensation is less than the organization's equivalent cost to make packaging decisions. But the strategy can readily introduce risks to the organization that result from suboptimal and dysfunctional packaging designs. This is because external PDMs are seen to make packaging decisions that are self-serving rather than optimal for the enterprise.

Third parties can design suboptimal and even dysfunction packaging types if contractual terms do not clearly reflect goal congruence. For example, third-party PDMs that are compensated for their package testing efforts were found to not necessarily be motivated to initially create optimal designs. This suggests that organizations are not necessarily aware of such risks or the negative consequences due to goal incongruence.

Organizations that are strategically considering outsourced packaging decision-making should perform due diligence regarding proactive oversight because external PDMs are subject to their own organization's behaviors. This is particularly necessary because ultimately only one organizational function compensates the third-party supplier. Commonly this is the purchasing function. External PDMs must be proactively administered in order to mitigate organizational risks. Parts suppliers and contract packagers that are empowered to make packaging decisions must have formal guidance regarding packaging decision criteria including the organization's

priorities. Standardized packaging materials also benefit the organization through leveraged purchase pricing. Proactive administration should include periodic audits of decisions that not only validate performance but also provides constructive feedback.

The outsourced decision-making strategy creates significant risk for the organization and serious implications for packaging management. Because it can require more organizational vigilance and oversight expertise than anticipated, the strategy was found to be routinely abandoned by organizations. Corporations' inconsistent use of third-party PDMs further demonstrates why findings from packaging management research are not readily generalizable.

5.3.5 Lack of Different Corporate Packaging Decision-Makers

Corporations were found that lacked a full compliment of assembly components, finished goods, or service parts PDM. The reasons for this, whether strategic or otherwise, were explored as best as possible with the cases' other PDMs. Nearly all informants expressed assumptions that packaging-related risks and opportunities do exist. Additionally it was found that corporate leaders are either unaware of the risks and opportunities, or strategic decisions had been made to not have PDMs for all of the corporations' commodities. The strategy to not have PDMs can result in avoidable corporate risks as previously described. The lack of PDMs for specific commodities, whether strategic or inadvertent, raises questions about corporate leaders' thresholds of awareness for packaging-related risks and opportunities. This is further discussed in the future research section.

5.3.6 Frequent Strategic Changes

Organizations that repeatedly change strategies can introduce unintended packaging-related risks. This has consequences for packaging management because organizations routinely make strategic changes due to recurring product innovation, evolving packaging science, and emerging corporate strategies. Strategies that emphasize one particular organizational packaging requirement over others commonly cause changes in PDM accountability, responsibilities, or both simultaneously. Research findings show these changes can have unintended consequences by producing unbalanced packaging decisions and suboptimal packaging. Additionally, strategies that repeatedly cycle or oscillate between goals, such as PDM headcount reduction savings versus departmental pursuit of EOP savings, indicate the lack of a long-term strategic vision or commitment of organizational leaders. While business cycles may justify periodic strategic changes, every change potentially introduces risks to PDMs through altered working environments and their interpersonal working relationships. While choosing and implementing corporate strategies may not be within the purview of PDMs, the recommendation is that organizational leaders proactively mitigate risks associated with frequent strategic changes.

5.3.7 Corporate Culture Change

Strategies that change corporate cultures can have implications for packaging management because shifting the authority for packaging decision-making can be met with organizational resistance. This is particularly evident for organizational entities that no longer control packaging decision-making, such as local manufacturing sites that relinquished decision-making authority due to the centralization of assembly components PDMS. The consequences

result in challenges to the newly empowered PDMs' authority and inhibit or delay the intended strategic benefits. Additionally, the newly empowered PDM's working relationships with other functions can be damaged and require additional time to be repaired and become effective.

While managing corporate culture change may not be within the purview of PDMs, the recommendation is that organizational leadership should not assume corporate cultures immediately embrace strategic changes. Furthermore, framed perspectives can assist leadership in mitigating relationship-based risk to more quickly realize strategic benefits.

5.3.8 Risk Awareness and Mitigation

The management of packaging must include the proactive mitigation of potential risks resulting from organizational behavior with respect to PDMs. The findings show how each of the researched variables can negatively influence packaging decisions and create suboptimal or dysfunctional packaging types that introduce various corporate risks. Each organizational behavior can have consequences that warrant risk awareness and mitigation particularly for organizations considering strategic changes that may impact PDMs. Because risk management may not be within the purview of PDMs, the recommendation is that organizational leaders be aware these risks and proactively mitigate them. Risk awareness will better enable corporate leaders to manage packaging with respect to emerging business strategies on an ongoing basis.

5.4 Research Limitations

Only durable goods producers were researched, due to their use of service parts packaging. The packaging decisions of fast moving consumer goods producers were not explored. While it is likely that fast moving consumer goods producers have assembly

components and finished goods PDM, it is not likely that they have service parts PDMs. Consequently the research does not address the potential influences that these organizations' marketing functions may have on packaging decisions in this industry segment. For fast moving consumer goods, it is possible that marketing functions' packaging needs may dominate packaging decision-making. Durable goods producers were researched so that the interplay of organizational behaviors could be better observed.

The research was diverse in the different types of finished goods ranging from very large heavy equipment to smaller computers. The research cases did not significantly include multiple manufactures of the same type of finished goods. This limits the ability for inter-case comparisons of direct competitors such as the research of multiple automobile manufacturers.

The diversity of finished goods also limited the ability to compare monetary ramifications of organizational behavior influences. For example, the logistical savings associated with optimal packaging of heavy equipment are entirely different from those of computers based on product size, value, and sales.

The lack of some embedded case PDMs limited direct inter-case comparisons. Additionally intra-case comparisons were limited by the same lack of PDMs particularly where only one of the potentially three PDMs was identified.

Similar to the previous research of packaging management, a generalizable pattern or template for superior packaging management was not found based on the various organizational behaviors that were studied. Although such findings would be useful, they were not expected and were not the intention of the research.

5.5 Future Research

Future research on the influences that organizational behaviors have on packaging decisions can readily build on the knowledge gained from this research. Recommendations for research include expanded qualitative research and quantitative research. Other recommendations include researching packaging management phenomena discovered during the research such as the organizational empowerment of PDMs. Additional future research should explore organizational risk awareness and risk mitigation pertaining to emerging business strategies as well as organizations' evolving definitions of optimal packaging. Caution should be exercised regarding new research in that a generalizable model for superior packaging management is not likely to result. Instead, future research should continue to explore the forces that shape packaging decisions.

Expanded qualitative research should include case study of other durable goods producers including direct competitors. This would enable additional inter-case comparisons that describe how direct competitors manage packaging. Qualitative research should explore cases from other industry segments such as fast moving consumer goods producers. This would enable inter-industry comparisons regarding packaging management. For these recommendations, the research methodology should be replicated to better compare findings.

Survey-based quantitative research is another natural progression because statistical analysis could augment the findings of the qualitative research. Because previous survey findings have had limited application due to generating point-in-time profile data of broadly diverse respondents, new research should selectively include specific types of packaging professionals, industries, or organizations for surveying. Survey questions should be designed

from the interview protocol in Appendix A to better relate quantitative data with qualitative research findings. Multivariate testing could potentially produce statically significant data regarding the comparative influences of different organizational behaviors or in specific combinations. Such research would add to the knowledge of packaging management and potentially produce additional actionable findings.

Additional research is recommended on the packaging management phenomenon of organizationally empowered and PDMs. The research showed that multiple organizational behaviors are deliberately changed simultaneously, and in different combinations, to empower PDMs and pursue EOP. But there are examples of PDMs that create EOP despite organizational behavior that might otherwise restrict their authority. An example in the PDM that is accountable to primary activity but is organizationally empowered to make packaging decisions on behalf of other primary and supporting activities. Another example is a non-management individual PDM who is empowered by virtue of the immediate superior's reporting level, that being a director, to pursue EOP for the organization. These examples suggest that organizational empowerment can transcend or override some organizational behaviors that otherwise might inhibit PDMs' authority. Research is needed to more fully explore the influences of *individual behavior* with respect to packaging management. It should specifically explore PDMs' interpersonal relationships, performance history, qualifications, and expertise regarding how they influence organizational empowerment.

Additional research is recommended to explore organizational risk awareness and risk mitigation pertaining to packaging management. Business competition virtually assures that business strategies will evolve and potentially have consequences for organizations' packaging

decision-making. For example, the relatively recent emergence of sustainability and brand protection as new business strategies now routinely influence packaging decision-making. Some cases demonstrate proactive packaging risk awareness while others exhibit awareness only after risks have been realized. The concepts of risk awareness, thresholds of awareness, and corporate risk mindfulness should be explored with respect to packaging decision-making. The purpose of the recommended research is to enable organizations to proactively mitigate packaging-related risks. Emphasis should be placed on determining who or what function is organizationally responsible for packaging-related risks at the strategic level. Additionally, if PDMs are found to be responsible, research should describe how organizations empower PDMs to act strategically particularly if it requires organizational changes.

Future research should explore organizations' evolving definitions of optimal packaging. Very few informants suggest that their organization's current packaging designs are not optimal. Yet nearly all cases demonstrated organizational changes intended to create better packaging designs. This suggests that what an organization defines as optimal today by may be considered suboptimal tomorrow. Research should explore the sources and causal factors that change organizations' definition of optimal packaging. The purpose of the research would assist organizations to better manage packaging by assessing their own ideal packaging requirements with respect to recurring product innovation, evolving packaging science, and emerging corporate strategies.

APPENDICES

APPENDIX A: INTERVIEWING PROTOCOL

Interviewing Protocol: Organizational Behavior and Influences on Corporate Packaging Decision Makers

Key Informants: Corporate Packaging Decision Makers
Research Question: How does organizational behavior influence packaging decision makers?
Propositions:

P_1: The PDM's organizational **accountability** influences the packaging decision criteria.

P_2: The PDM's organizational **responsibilities** influence the packaging decision criteria.

P_3: The PDM's organizational **reporting level** influences the packaging decision criteria.

P_4: The PDM's organizational **structure** influences packaging decisions.

P_5: The PDM's organizational **frames** influences packaging decision criteria and packaging decisions.

P_6: Organizational **changes** reshape the organization-based influences on PDMs.

Interview Introduction:

Hello. My name is Doug Moyer and I'll be interviewing you today. I'd like to thank you in advance for your help and give you an overview of the process before we begin.

Today we are going to talk about how packaging decisions are made at your company. Particularly, we're going to talk about your experiences involving packaging and the packaging decision-making process. I am not here to provide you with information. My role is to just ask you questions and listen to what you have to say.

It's really important to know that there are no wrong answers. Even if you have an opinion that seems different from what other people might think, it's really important that you share your thoughts and ideas. Also, if you don't know the answer to a question, just tell me. That is perfectly acceptable.

I want to be sure that you know that I am going to be recording what you say because your comments are very important, and I don't want to miss anything you share with me. However, I want you to know that your name will not be connected with anything you share.

I think that covers everything. Do you have any questions for me before we begin? I'd like to begin with some questions about your role and your organization's packaging.

Questions Topics: Introductory

1. What is your title?
2. What are your responsibilities?
3. Tell me about the products that you design packages for. *NOTE: Confirm value chain application point(s)*

4. Do you have formal packaging decision criteria or a packaging cost analysis tool? *NOTE: Confirm evidence of formal or informal tools*
    a. If not, how are packaging decisions made? *PROMPT: **P_5** frames influences. NOTE: Consistency*
5. Are there other places in your company that require package designs? *PROMPT: raw materials/components, finished goods, service/repair parts, etc.*
    a. If so, who makes those packaging decisions? *NOTE: Additional packaging decision scenarios and additional interview candidates*

Questions Topics: Structure, Level, Accountability, Responsibilities, and Changes

Now I'd like to discuss your packaging organization.

6. How is your work organized? *PROMPT:* individual, team, department, etc.; ***P_4** structure influences*
7. *IF STRUCTURE IS "INDIVIDUAL":* What level in the organization are you? *PROMPT: first level manager, mid-level manager, director, etc.; **P_3** reporting level influences*
8. Who do you report to? *PROMPT: **P_1** accountability influences*
    a. What corporate activity does that person work in? *NOTE: search deep into the PDM's organizational hierarchy*
9. What level in the organization is he/she? *PROMPT: e.g. first level manager, mid-level manager, director, etc.; **P_3** reporting level influences*
10. Which company functions that have packaging needs are incorporated into your decision criteria (formal) or decision-making process (informal)? *PROMPT: **P_2** Responsibility influences*
11. Do these diverse corporate functions have packaging requirements that ever conflict? *PROMPT: **P_1** accountability and **P_2** responsibility influences*
    a. If so, how are conflicts resolved? *PROMPT: **P_5** frames influences*
12. Do they have direct or indirect input to the decision criteria (or decision making process)? *PROMPT: **P_1** accountability and **P_2** responsibility influences. NOTE: Define who has direct influences and indirect influences*
    a. How is that accomplished? *PROMPT: **P_5** frames influences*
13. How are the diverse corporate requirements of packaging balanced within the packaging decision criteria (or decision making process)? *PROMPT: Proportions, etc.; **P_1** accountability and **P_2** responsibility influences. NOTE: confirm the PDM's authority for the packaging decision criteria.*
14. Regarding changes to the packaging decision criteria (or decision making process), have the different represented functions changed over time? *PROMPT: e.g.,* additions, deletions, etc.; ***P_6** changes and **P_2** responsibility influences*
    a. If so, why? *NOTE: Strategic needs, etc.*
15. How often does this happen? *PROMPT: **P_6** changes influences*

16. Regarding the different corporate functions represented in the packaging decision criteria (or decision making process), have their proportional weightings changed over time? *PROMPT: **P_6** changes and **P_2** responsibility influences*
    a. If so, why? *NOTE: Strategic needs, etc.*
17. How often does this happen? *PROMPT: **P_6** changes influence*
18. Now I'd like to focus on organizational alignment of the packaging decision makers for a moment.
19. Have packaging decision makers always been aligned to the current corporate activity? *PROMPT: **P_6** changes and **P_1** accountability influences*
    a. If not, who else?
20. Regarding changing organizational alignments, does this change the packaging decision criteria in any way? *PROMPT: **P_6** changes and **P_1** accountability influences*
    a. If so, how? *PROMPT: **P_5** frames influences*
21. How often do organizational realignments occur? *PROMPT: **P_6** changes influences*

Now I'd like to focus on the organizational structure of the packaging decision makers for a moment.

22. Regarding how your company's decision makers are organized, has it ever been structured differently? *PROMPT: individual, team, department, etc.*
    a. If so, how? *PROMPT: **P_6** changes and **P_4** structure influences*
23. Did having different structures change the packaging decision criteria or the decision making process in any way?
    a. If so, how? *PROMPT: **P_6** changes and **P_4** structure influences*
24. How often do these structural changes occur? *PROMPT: **P_6** changes influences*

Now I'd like to focus on the organizational reporting level of the packaging decision makers for a moment.

25. Have packaging decision makers always reported to the same organizational level as they currently do? *PROMPT: **P_6** changes and **P_3** reporting level influences* If not, at what other levels?
26. Regarding the different organizational reporting levels, did this impact the packaging decision criteria? *PROMPT: **P_6** changes and **P_3** reporting level influences*
    a. If so, how? *PROMPT: **P_5** frames influences*
27. How often do changes to reporting levels occur? *PROMPT: **P_6** changes influences*

Now I'd like you to help me describe or frame my perspective of your company and how packaging decisions are made. *PROMPT: **P_5** frames influences*

28. I want you to choose one of four metaphors that best describes your organization: a machine, a family, a jungle or a temple. *PROMPT: machine or factory; temple or*

carnival, theatre. NOTE: Frames sequence – structural, human resource, political, symbolic

a. Let's discuss why you chose that one.
b. How would you rank the remaining three and why?

29. Now I want you to choose one of four images that best describes your organization's leadership: empowerment, political savvy, inspiration, or social architect. PROMPT: political savvy or advocacy. *NOTE: Frames sequence –human resource, political, symbolic, structural*
    a. Let's discuss why you chose that one.
    b. How would you rank the remaining three and why?

Respondent's Narrative: Critical Incidences and Frames Influences

30. I'm almost done with my questions. Now I'd like you to tell me some "corporate stories." Think about a situation when your company designed a very successful package. I want to you to tell me all about it because I want to understand it in a full context. You can give me as much detail as you like - including how it made you feel. I especially want to understand how it was possible from an organizational perspective – as we've been discussing. Take your time and begin when you are ready. *PROMPT: **P_5** frames influences. NOTE: Explore relationships*

31. That was great. Now I'd like you to think about the opposite situation, when the package decision-making process didn't work or at least not as good as it could have. Again, I want to you to tell me everything because I need to understand it in full context. You can give me as much detail as you like - including how it made you feel. I especially want to understand the event from an organizational perspective – as we've been discussing. Take your time and begin when you are ready. *PROMPT: **P_5** frames influences. NOTE: Explore relationships*

Questions Topics: Packaging, Strategy, and Risk

Now I want to understand the consequences or risks of packaging decisions.

32. Tell me about the consequences or risks to the corporation regarding the "poor packaging" example you described. *PROMPT: e.g., retooling expenses, customer loyalty, etc.; **P_5** frames influences. NOTE: Explore corporate effects and risks*
33. Tell me about the consequences or risks to employees regarding the "poor packaging" example you described. *PROMPT: e.g., packaging decision makers' moral, etc.; **P_5** frames influences. NOTE: Explore employee effects and risks (corporate, employee moral, other)*
34. Is packaging part of any corporate risk assessment or a risk mitigation plan? *NOTE: Explore corporate risks and strategies*
    a. If so, please describe it.
35. Is packaging part of a your company's strategy? *PROMPT: e.g., sustainability goals, anti-counterfeiting tactics. NOTE: Explore corporate risks and strategies*

a. If so, how?

36. Before we end the interview, is there anything else interesting or important about packaging decision making at your company that we haven't touched on?

Thank you for your time. I appreciate your participation in this research.

APPENDIX B: CASE STUDIES

This appendix summarizes the five case studies. Each case is described in a systemic way beginning with a brief overview of the company including its product offerings. Within the cases, each embedded case PDM is then described with respect to the organizational behaviors defined in the research propositions. Structure-based organizational behaviors, such as the PDM's organizational accountability and responsibilities (P1, P2), are described including value chain perspectives with an embedded case VCM. Structure and relationship-based organizational behaviors, such as the PDM's organizational reporting level and structure (P3, P4), are then described using value chain and framing perspectives. Next, relationship-based organizational behaviors, such as the PDM's organizational or environmental frames and organizational changes (P5, P6), are described using framing perspectives. The embedded case summaries describe *how* these organizational behaviors influence packaging decisions and PDMs. Also included are descriptions of the resultant packaging with the positive and negative consequences for the company.

Each case study section concludes with an intra-case analysis that compares and contrasts the embedded cases with each other. Intra-case comparisons of the different embedded case PDMs is presented in tabular form organized by the research propositions including current and historical states. The intra-case analyses provide the basis for the inter-case analysis presented in Chapter Four.

Case 1: Heavy Equipment Manufacturer

The first case is a respected manufacturer in the heavy equipment industry. The following sections summarize each embedded sub-case with respect to the research propositions, supporting evidence, and validation of the theoretical relationships. The sub-case sections are then followed by an intra-case comparison focused on the proposed theoretical relationships including how packaging designs contributed to or reduced corporate risks. The intra-case comparison includes a summarizing table for the PDMs with respect to the research propositions covering current and historical states. The case study summary concludes with a brief discussion regarding the lack of a finished goods PDM and the potential corporate risks.

Embedded Case: Heavy Equipment Assembly Components

A recent transition from organizationally dispersed PDMs to a central PDM authority has resulted in packaging designs that are significantly better for the organization. Historically, the organization's various assembly facilities and component suppliers independently made packaging decisions. Now there is a central packaging decision-making authority that oversees packaging decisions for the organization and provides packaging guidance to assembly facilities and suppliers. The following sections describe the consequences that specific organizational behaviors currently have on assembly components packaging decisions. A section that describes how organizational change has influenced the PDMs follows these.

Organizational Accountability

The PDM for assembly components is now accountable to the organization's global supply chain function. From a value chain modeling perspective, the PDM is integrated in the supply chain function that is a supporting activity for the organization. The supply chain function supports and manages all logistical and production needs for assembly operations globally. This includes the delivery of assembly components from suppliers to more than a hundred facilities and production lines. The primary role of the supply chain function is to ensure the cost-effective and timely handling of assembly components from suppliers to assembly facilities. This is accomplished by standardizing and managing logistical processes globally and centrally leveraging corporate transportation costs.

The organization's strategic rationale for integrating the PDM in the supply chain function is that packaging can be a key enabler for capturing global supply chain opportunities. For example, the integrated PDM is able to standardize and manage packaging processes and centrally leverage packaging costs. These are critical to maximizing supply chain efficiencies.

Organizational Responsibilities

The PDM's organizational responsibilities coincide with those of the supply chain function in terms of logistics, production operations, and purchasing. The PDM is responsible for packaging as it relates to logistical costs such as optimizing transportation through cube utilization. The PDM's responsibilities include the operational needs of production facilities such as handling efficiency and worker safety. The PDM is organizationally responsible to the purchasing function for packaging material and labor costs. The PDM's responsibilities extend externally to include suppliers to ensure that their processes and capabilities are compatible

with packaging designs. Packaging designs that are compatible with suppliers supports both throughput and cost control for the organization. All of these organizational responsibilities are balanced while still enable packaging designs that maintain component quality and the flow of material through the supply chain.

The PDM has standardized organizational responsibilities across the assembly facilities and supply base by establishing a global packaging council, developing a standard specification template, and publishing a packaging guidance document.

The global packaging council is a “knowledge network” intended to bridge the knowledge gap between representatives having packaging decision-making “experience” with those having only the “title” of PDM. PDM hosts monthly council meetings that have approximately sixty attendees that represent assembly facilities and suppliers. This enables attendees to discuss and obtain assistance with their particular packaging issues. Council meetings enable the PDM to broadly communicate evolving packaging standards, definitions, decision-making tools, and strategies.

The packaging specification form ensures that the PDM’s diverse organizational responsibilities are considered in the packaging decision-making process and related data is captured for potential future use. This template is used by assembly facilities and suppliers during the packaging decision-making process and requires specific information to make decisions. For example, the PDM’s responsibilities to the purchasing function are demonstrated by capturing the estimated packaging material and labor costs for an assembly component package within the specification form.

The “generic packaging and shipping guide” provides supplement guidance to assembly facilities and suppliers when packaging decisions are complicated due to atypical or new assembly components. The guide is used for assembly components that do not require documented packaging specifications. Such parts are considered low impact due to their small size, durability, lack of complexity, or relatively low value. The packaging and shipping guide is another way that the PDM has standardized organizational responsibilities and deployed them across the network of assembly facilities and suppliers.

The supply chain function’s influence on PDM’s organizational responsibilities is evident in the global packaging council, packaging and shipping guide, and packaging specification form. These tools were developed by the PDM so that packaging decisions proactively consider all of the organization’s packaging requirements in a balanced manner by assembly facilities and suppliers.

Organizational Reporting Level

The PDM’s organizational reporting level affirms the PDM’s strategic value to the supply chain function and the organization. The PDM’s organizational reporting level is described as “mid-management“ and the PDM reports to the organization’s supply chain director. The PDM’s elevated reporting level is obvious and reinforces its organizational stature as a supporting activity having global authority. This empowers the PDM to make packaging decisions on behalf of the entire organization.

Organizational Structure

The PDM's organizational structure empowers the PDM team to work autonomously and create enterprise optimal packaging. The PDM's organizational structure is a small team that independently develops packaging strategies, prioritizes tasks, and deploys its resources with minimal organizational oversight and influences. The PDM team consists of a manager, a packaging engineer, an information technology (IT) specialist, and a Six Sigma "black belt" specialist. All human resources are organizationally dedicated meaning that they are not cross-functionally shared. The team leader is a mid-level manager who is exclusively responsible for overseeing the team's activities and resources. This organizational structure allows the PDM to standardize packaging decision-making processes across the organization.

Organizational Frames

Understanding the organizational influences on the PDM from framing perspectives is complicated by the PDM's recent organizational transition to a centralized authority. In describing the PDM's current work environment, informant responses sometimes referred to the PDM's organizational history, as these are recent and vivid memories.

For example, the department manager identified with the political frame's metaphor of a jungle. The PDM's previous work environment was described as having "no standards", "no consistent solutions", and "no visibility to business units' solutions." When asked to select the image of a leadership style, the political frame was again chosen due to its benefits of having successfully leveraged the PDM's organizational transition to a centralized authority. Having politically savvy leaders was seen as enabling the "networking from above" that was required to complete the PDM's organizational transformation from dispersed and uncoordinated PDMs.

In the present tense, informants identified with the human resource frame's leadership image of empowerment. It described the PDM's evolved organizational empowerment and ability to strategically manage packaging for the organization.

Overall, organizational framing perspectives confirmed that the PDM has moved from what was a comparatively chaotic environment into one having more order and controllability. This was critical to the PDM's evolution to the organization's central packaging authority.

Organizational Change

Organizational change has centralized packaging decision-making for assembly components. Corporate leaders who understood the potential strategic value of service parts packaging initiated the organizational changes for assembly components. Beyond strategic value, the organization's need for change was due to the way packaging decisions were previously made.

Historically the organizationally dispersed PDMs created suboptimal packaging designs because they had a "very narrow focus" due to their local business needs and strategies. EOP was at best only a concept and not pursued. Packaging decision-making was performed by assembly plants and suppliers who were primarily focused on fitting products into available containers. For fifty years this appeared to be adequate as the corporation had: "smaller, simpler product lines"; "70% of manufacturing was completed in-house"; "significantly less complex supply chain"; and production schedules were built on forecasted demand that "pushed" inventory.

The corporation's business conditions significantly changed over time and it was determined that the historical way of making packaging decisions could not support emerging

initiatives such as “Supply Chain Optimization.” Furthermore, it was determined that component suppliers had caused the majority of diverse packaging configurations, referred to a “potpourri.” Now the organization has over a hundred facilities with “hundreds of product lines”; “80% of manufacturing work sourced outside”; a “world class supply chain” with international logistics; and production based on actual demand that “pulls” inventory.

Corporate leaders concluded that packaging “represents a significant cost reduction opportunity” and organizational changes were necessary to “drive a common packaging discipline throughout the enterprise.” Organization change began with a strategic vision called the “Production Center of Excellence Packaging Vision.” The strategy set several goals including: establish corporate governance for packaging; develop standard packaging work processes and procedures; utilize a common IT system; develop packaging talent; and utilize consistent communications and standards throughout the supply chain. The objectives of the strategic change for PDMs were to reduce supply chain costs by: improving safety and ergonomics; establishing cost effective packaging solutions; improving quality; improving sustainability; and increasing velocity.

Organizational change for the PDM was a strategic decision to improve packaging related worker safety and ergonomics. A corporate study reported that 34% of all worker injuries were related to ergonomics. A packaging example of this is the manual unloading of large bulk containers of assembly components. If containers do not have sidewalls that can be removed or moved out of the way, workers are forced to take an unsafe position by leaning into containers to reach bottom components. Some assembly components are heavy, leading to lower back injuries that increase healthcare costs. The new centralized PDM now instructs

assembly facilities and suppliers on “right-sizing” packaging from an ergonomic perspective. This matches components with packaging based on product weight and order quantities. This has improved ergonomics for both returnable containers and expendable packaging.

Organizational change for the PDM was a strategic decision to reduce the cost of packaging by improving the visibility of the organization’s packaging costs. For example, “98% is buried” in component piece pricing. The organization estimates that as much as 10% of its total material cost is for packaging. The organization determined, through competitive benchmarking of manufacturers, that packaging material costs that are less than 2% of total material cost is “world class.” Narrowing the gap between 10% and 2% represents a significant cost reduction opportunity for the organization and could be as much as “over a billion dollars.” The organizational change to “create a focused approach on managing packaging” has created two objectives that did not exist for the organization’s historical PDMs: “determine supplier packaging costs” and “reduce cost through improved packaging.”

Organizational change for the PDM was a strategic decision to improve part quality by reducing damage. The organization considers product damage from dysfunctional packaging as a quality issue. For example, battery packaging was historically determined by suppliers or individual assembly facility’s PDMs. Typically it consisted of wood pallets, corrugated fiberboard layering sheets, and plastic stretch wrapping. This expendable packaging was susceptible to damage from forklift trucks that occasionally pierced pallet loads. The packaging was dysfunctional in that it did not adequately protect the product upon receipt. More robust and reusable packaging was redesigned by the central PDM authority that minimizes mishandling damage, eliminates the health and safety issues related to hazardous acid spills from broken

batteries, and reduced the organization's cost of reworking damage components. The new PDM is able to replace dysfunctional packaging designs with ones that are better for the organization.

Organizational change for the PDM was a strategic decision to improve sustainability by increasing the use of reusable shipping containers. Consistent with the corporation's sustainability goals and brand image, the organization uses the new PDM to drive sustainability through packaging decisions. This includes reducing the use of disposable packaging such as corrugated fiberboard cartons in favor of returnable containers. One way this is accomplished is through better accountability of the returnable container fleet. Historically PDMs used the fleet based on component configuration, order quantity, and container availability. The dynamic usage of returnable containers meant that different containers were potentially used from one supplier shipment to the next. The organization did not have visibility to the fleet and was unable to control its resources. Containers would be lost or maldistributed in the supply chain. Container shortages increase the use of expendable packaging alternatives that add avoidable material costs and landfill disposal costs. The returnable container usage inconsistency inhibits the supply chain function from performing basic logistical tasks such as forecasting container demand and building safe and efficient trailer loads. Without the means of planning container consumption, the organization was at risk of disrupting production operations. The new centralized guidelines for the proper use of returnable and expendable container throughout the supply chain has saved the organization avoidable material costs and reduced landfill waste.

The PDM's organizational change supports the corporation's strategic vision of a production pull system and the organization's goal of improved supply chain velocity. The previously described historical use of the returnable container fleet inhibited the flow of components from suppliers through to the various assembly points. There were several opportunities for the organization to better manage its inventory and packaging decisions were an enabling tool. For example, it was not uncommon for suppliers to fill and ship containers with assembly parts regardless of the ordered quantity. While these overages may have appeared to be the judicious use of available space in returnable containers, it lead to repacking expenses at the assembly plants as well as storage and carrying costs of unused inventory. The new PDM administers the proper selection of containers by assembly plants and suppliers that reduces the amount of void in containers and improved cube utilization in shipping trailers. Subsequently this lowers freight costs and improves the flow of components through the supply chain. One informant's "best guess" regarding the amount of logistical savings that have already resulted from the PDM's organizational change was simply described in terms of "millions" (of dollars).

The organization's strategic vision was the basis for organizational changes to the PDM. The historical organizational configuration of dispersed and independent PDMs was unable to support the organization's emerging strategies. The new central PDM is empowered to standardize packaging decision-making and better enables optimal packaging for all of its assembly facilities. The PDM's new organizational configuration provides the organization with better visibility and control of packaging as it relates to safety, ergonomics, material costs, product quality, sustainability, and inventory velocity.

Organizational change has evolved the PDM's role beyond assembly components packaging decisions to one having strategic value for the organization. The new PDM is empowered to create packaging strategies, prioritize initiatives, and pursue packaging tasks on behalf of the entire organization. This is demonstrated by the global packaging council's "dashboard." This reporting tool provides a quick color-coded status of various packaging projects undertaken by the PDM. The dashboard tracks the progress and ownership of various packaging initiatives such as replacing rigid steel containers with collapsible plastics alternatives.

Not only did organizational change evolve the PDM into a strategic contributor, it simultaneously transformed all of the organizational behavior variables that are the subject of this research. The remainder of this section explores each organizational behavior variable by comparing previous and new PDMs. This includes the influences that organizational changes have had on packaging designs.

Changes were deliberately made to the PDM's organizational accountability in order to govern and standardize the packaging decisions that the organization strategically sought. The historical PDM's organizational accountability has changed from dispersed pockets of packaging decision-making that existed within individual assembly facilities. For approximately forty years, local PDMs were organizationally accountable to different functions depending on their particular assembly facility. PDM accountability scenarios included local quality, supply chain, and manufacturing functions. The organizational transition begun in the last several years created a central PDM that is accountable to the organization's central supply chain function.

Organizational change enabled the PDM to govern packaging decisions through an electronic packaging system that provides access to packaging data for the whole supply chain. The packaging system is a "software solution that provides a format for creating and presenting packaging instructions" including a "database for storing packaging materials and standardized work steps." The organization committed hundreds of thousands of dollars to fund this IT project that is currently being piloted at an assembly facility. When fully launched, the packaging system will contain packaging information at the component level by assembly facility. Component specific packaging data will include attribute data such as the required container type (e.g., steel tube, collapsible plastic tote, etc.), container dimensions, and filled weight. The packaging specification will contain packing instructions that detail how components should be packed such as how to orient components in the required container. The packaging system drives standardization of packaging decisions beyond single components. For example, the system can be used to replicate the use of common packaging and packing processes for similar components. In this way "known" and "proven solutions" are replicated and standardized throughout the supply chain.

Computer queries will be directly performed externally by suppliers and internally by various organizational functions giving them real-time access to packaging data. The packaging database supports queries for specific information such as the packaging requirements of a specific assembly component. System functionality enables reports to be designed and generated such as "where used" reports that list particular packaging requirements by facility. Such a report can improve the management of returnable containers by providing visibility to site-specific container requirements. The packaging specification system can provide the

purchasing function with packaging cost data. Supplier-specific packaging cost data can enable the purchasing function to leverage component and packaging suppliers alike.

The packaging system provides the supply chain with a powerful forecasting and planning tool. By linking the database to assembly facilities' production schedules, logistical planning can be done at the trailer level to improve cube utilization, at the routing level to create shipping lanes for returnable containers, or at the facility level to simulate the flow of packaged components from trailer unloading to unpacking assembly components.

The new PDM's organizational accountability empowers it to strategically govern packaging decisions throughout the supply chain. Packaging designs that are better for the entire organization are now being created and corporate risks such as safety incidences and avoidable costs are being reduced.

Organizational changes were deliberately made to the PDM's organizational responsibilities in order to change how the PDM balances competing corporate packaging requirements. For over forty years, PDMs' packaging decisions were narrowly focused on local assembly facilities' priorities. For the majority of assembly components, the dispersed PDMs were primarily focused on component fit into the various and available returnable containers. Beyond this aspect of packaging performance, organizational responsibilities such as worker safety and product quality were only considered if packaging issues were subsequently discovered. Other organizational responsibilities such as the purchasing and supply chain functions were potentially considered but not necessarily prioritized. Using an enterprise perspective for packaging decision-making was left to the discretion of the assembly facility's management. The organization's purchasing function was unable to leverage the organization's

packaging costs because packaging decisions were independently made at each assembly plant. Similarly, the supply chain function was compromised in its ability to minimize the organization's logistical expenses. Historically, PDMs did not have central guidance or the authority to create packaging designs that considered or balance all of the organization's various needs.

Organizational change empowered the new central PDM to rebalance its responsibilities for the entire organization. Now packaging decision-making is referred to as "tribal knowledge" because it is built from the shared PDMs' experiences from different assembly facilities. The new PDM ensures that decision-making considers its various organizational responsibilities such as those of the purchasing and supply chain functions as well as worker safety and product quality. The PDM continues to standardize decision-making so that all of the various organizational responsibilities are proactively considered and balanced for the entire organization.

The PDM's organizational reporting level was strategically raised by the organization to better enable the PDM to create EOP. Historically the individual assembly facilities' PDMs were typically non-management employees that reported to various first-level managers depending on their location. These PDMs had no organizational forum or mechanism that allowed them to share "best practices" with one another. The PDMs' non-management reporting levels contributed to the organization's inability to leverage packaging decision-making on behalf of the entire organization.

The organization's new central PDM has a mid-level manager who reports to the supply chain director that empowers PDMs to exercise packaging authority across all assembly

facilities. This is evident by the PDM's management of the global packaging council as well as annual packaging and training workshops for suppliers and assembly facilities. The new PDM's organizational reporting level enables the governance that was strategically sought by the organization to pursue strategic packaging opportunities.

Organizational change deliberately reconfigured the PDM's organizational structure to give the PDM the dedicated resources needed to pursue EOP. Historically, PDMs were individual employees that were not exclusively dedicated to making packaging decisions and typically they performed other tasks at their locations. This organizational structure impeded packaging decision-making that could have benefited the entire organization because PDMs were not necessarily exclusively focused on packaging. Not only did PDMs lack the necessary resources to pursue EOP, they were dispersed and unable to consolidate their resources for strategically prioritizing packaging for the entire organization.

The new PDM's organizational structure provides the necessary resources and authority to perform strategic packaging projects for the organization. The new central PDM is structured as a team having human resources that are not shared and are organizationally dedicated to making EOP decisions. The PDM's new organizational structure enables it to prioritize and pursue strategic packaging tasks such as the development and implementation of the new packaging specification system. The PDM's administration of its team resources is evident by a "monthly action dashboard" that tracks the progress of packaging projects including the individuals who are accountable for them.

Organizational change has altered the PDMs' organizational frames from political to human resource. PDMs' organizational frames reflect their workplace environments in the

organization as well as their motivation to perform. Historically, the PDMs appear to have worked in organizations characterized by a political frame. The dispersed PDMs' working environments required that packaging decisions prioritize local organizational needs, such as "product fit", over the packaging needs of the entire organization. Safety concerns were not necessarily considered by PDMs and only became a priority after packaging-related accidents occurred. While it is unclear exactly how the dispersed PDMs felt about their work environments, their performance was evaluated by their local organizations based on local authority. This is consistent with the political organizational frame.

The new central PDM's organizational frame reflects the human resource frame by virtue of its emphasis on employees and relationships. For example, the new PDM's team members are organizationally empowered and have the authority make to decisions that benefit the entire organization. The new human resource frame is further demonstrated in the "Production Center of Excellence Packaging Vision" that specifically includes "developing packaging talent." This suggests that organization frames were deliberately changed as part of the strategy to centralized packaging authority. The new PDM's organizational frame affirms that the organization values its human resources that are important to executing packaging strategies behalf of the organization.

Organizational change has directly and indirectly empowered the PDM to create better packaging for the entire organization. The organization strategically manipulated the PDM's organizational accountability, reporting level, and structure to capture the strategic value of assembly components packaging. This organizationally empowered the PDM and created the packaging governance required for emerging organizational strategies. By better empowering

the PDM, the organization indirectly changed the PDMs' responsibilities. In particular, this influenced how the new PDM balances the sometimes competing packaging requirements of various organizational functions. Organizational change shifted the PDM's organizational frame. The PDM and its team members now operate in an organizational environment that values its human resources and empowers them to fulfill the organization's strategic needs. All of the changed organizational variables have positively influenced the PDM as demonstrated by its new ability to govern packaging for the organization and pursue EOP.

Validation of Theoretical Relationships

This case shows that organizational behavior has influenced the packaging of assembly components in several ways. This section addresses the previously presented evidence supporting the research propositions. Additional supporting evidence is presented including any evidence that does not support the propositions.

P_1: There is evidence supporting the proposition that the PDM's organizational accountability influences packaging decisions. In order to fulfill the organization's strategic packaging needs, the PDM is now accountable to the global supply chain function. There it operates as a supporting activity for the primary activities of inbound logistics and assembly operations as well as other supporting activities such as purchasing, quality, and safety.

The PDM's new organizational accountability has enabled packaging decision-making to be centrally governed for all suppliers and assembly plants. The PDMs created and launched decision-making tools that lead to EOP designs. These packaging decision-making tools includes the global packaging council, the packaging and shipping guide, the standard packaging specification form, and the piloted packaging IT system. These tools demonstrate the

organization's commitment to strategic packaging decisions and are the evidence that organizational accountability influenced packaging decisions.

Specific historical evidence supporting the proposition includes dispersed PDMs who had narrow foci influenced by their local organizational accountability. No evidence was found that directly contradicts the proposition.

P_2: There is evidence supporting the proposition that the PDM's organizational responsibilities influence packaging decisions. The new PDM's packaging decision-making tools demonstrate the PDM's ability to standardize and proactively balance its organizational responsibilities throughout the organization. Historical evidence supports the proposition in that dispersed PDMs were focused on their local organizational responsibilities. Those included fitting products to containers and only addressing safety and quality issues if they occurred and were detected. No evidence was found that contradicts the proposition.

P_3: There is evidence supporting the proposition that the PDM's organizational reporting level influences packaging decisions. The new centralized PDM is hierarchically elevated to a mid-management role. The organization intentionally made this change to empower the PDM and create a focus on packaging within the organization.

One way the centralized PDM demonstrates its organizational empowerment is by providing packaging expertise to suppliers and assembly facilities that request packaging assistance. This benefits the organization as suppliers and assembly facilities may lack the necessary packaging skills to resolve packaging problems themselves.

An example of the PDM using its expertise to resolve a local problem concerned damaged engine starters. A specific assembly facility routinely experienced damaged engine starters that were packaged on wooden pallets. Quality issues, safety concerns, and product reworking expenses justified a more robust packaging design. Representatives from the assembly facility began by working with the supplier to design returnable metal racks. The new metal racks were customized to several engine starter configurations but were not universally applicable to all of the supplier's starters. Additionally, the new packaging was much more expensive and it did not fully eliminate product damage. The assembly facility subsequently requested the central PDM authority to pursue a packaging solution for the engine starters problem. The PDM used its expertise to develop formed plastic tray packaging. Prototype trays were designed and tested for product protection as well as reusability. The new returnable plastic trays were more universally applicable to the supplier's various engine starter configurations. The PDM's expertise not only resolved a local packaging problem but the better packaging design was later replicated for other engine starter suppliers and assembly facilities.

By manipulating the PDM's organizational reporting level, the organization influenced packaging decisions to benefit the organization. It demonstrates the organization's recognition of the value that packaging designs can have.

Historical evidence supporting the proposition demonstrates that the dispersed PDMs were not organizationally empowered to create optimal packaging beyond their local assembly facilities. Although the dispersed PDMs' organizational reporting levels were not uniform across all locations, these were typically non-management role. No evidence was found to directly contradict the proposition.

P_4: There is evidence supporting the proposition that the PDM's organizational structure influences packaging decisions. The new PDM's structure of a small team having dedicated resources enables packaging decision-making to be more uniformly throughout the supply chain. This is demonstrated when the department undertakes "corporate projects" to make packaging decisions that benefit multiple assembly facilities and suppliers. Corporate packaging projects are typically focused on commodities or families of assembly components such as engines, axles, fuel tanks, cooling modules, and others. The previously described packaging solution for engine starters is an example. Once a particular problem is resolved at a supplier or assembly plant, the PDM applies its resources to replicates the packaging solution across the commodity and throughout the supply chain. Improving packaging designs for entire commodities are large opportunities for the organization that can simultaneously reduce packaging costs, improve quality, improve safety, and reduce logistical costs. The PDM estimates that the engine starter packaging project yielded an annual net savings of $1M for the corporation.

These projects permit the PDM to prioritize and dedicate its resources on behalf of the organization. The PDM's team resources describe this as "replication knowledge" that benefits the enterprise. Historically corporate projects were not possible because the dispersed PDMs lacked authority and had limited resources

Historical evidence supporting the proposition was not found but it is assumed that the dispersed PDMs were not fully dedicated to packaging decision-making due to other tasks. Only assumptions exist regarding the potential influences that the dispersed PDMs' structures had

on packaging decisions. This evidential gap does not contradict the proposition and no evidence was found to directly contradict the proposition.

P_5: There is evidence supporting the proposition that organizational frames influence PDMs. This is supported by informant descriptions of both the negative and positive influences that the political organizational frame has had on the PDM's working environment.

One example illustrates how the organization's political nature impeded the packaging decision-making process. An assembly plant experienced repeated packaging failure for batteries so the central PDM and the battery supplier pursued a packaging solution. Designing, prototyping, and testing processes for new preformed plastic trays went smoothly for the PDM and the supplier. For an unknown reason, the supplier advised the corporate purchasing function that the packaging decision-making process "was a problem." The supplier further suggested that the new packaging design was incompatible with the supplier's processes. This caused the purchasing function to be unsupportive of the proposed packaging designed by the PDM. The confusion began with the supplier carried forward to the purchasing function and caused a nine-month delay before the PDM's original packaging solution was implementing.

The incident illustrates a negative influence that can arise from the political frame when organizational power is the basis for decision-making. Because the incident happened early during the PDM's organizational change to a centralized supporting activity, it appears that the purchasing function attempted to politically exert its authority over the fledgling PDM supporting activity. It was only resolved after repeated discussions between the purchasing function and the PDM manager. There the PDM's organizational responsibilities to the

purchasing function were adequately demonstrated as part of the original decision-making process.

The incident was frustrating for PDM's individual team members because the credibility of the PDM team, and the abilities of its team members, had been openly questioned by the purchasing function. It was particularly frustrating for individuals who had made packaging decisions based on their organizational responsibility to the purchasing function, yet their decisions were challenged by that same function. While it is clear that the PDM continues to perform its duties that include support for the purchasing function, it is not clear how much damage may have been done to the PDM's organizational relationship with the purchasing function of the supplier.

Positive influences of the political organizational frame were demonstrated by the ability of the organizational leadership to authoritatively make the changes that established the central PDM. The PDM's comment regarding "networking from above" shows that the organization's leadership had to use its authority to make the various organizational functions, assembly facilities, and suppliers accept the new PDM's central authority for all packaging decisions. This shows the positive influence that the organization's political frame had on the PDM.

The PDM's organizational environment is much more collaborative today with respect to decision-making, demonstrating the human resource frame's emphasis on relationships as the basis for decision-making. This shows that the human resource frame is evolving and positively influencing the PDM's ability to make packaging decisions for the entire enterprise.

The framing proposition highlights a timing issue related to culture change within the organization. Informants indicated that culture change, specifically in the form of universal acceptance and support for the central PDM, has lagged behind the actual organizational change.

For example, the previously described battery packaging incident indicates that organizational change is not instantaneous particularly when moving from the political frame to the human resource frame because the basis for decision-making shifts from a base of power to collaboration. This suggests that changes in corporate culture require time to become fully accepted. For organizational reframing to succeed, strategic planning should anticipate delays and mitigate risk due to potential resistance from inside and outside the company. No other evidence was found that directly contradicts the proposition.

P_6: There is strong evidence supporting the proposition that organizational changes influence PDMs. Evidence of this is how the PDM has been empowered through changes to organizational behaviors such as accountability, responsibilities, reporting level, and structure. These changes were strategically made by the organization in order to influence the PDM and strategically capture packaging-related opportunities.

Prior to the organizational change creating a central PDM authority, PDMs were independent and dispersed throughout the organization. Those PDMs, assuming they even existed as individuals who were organizationally dedicated to making packaging-decisions, did not have uniform organizational accountability, responsibilities, reporting levels, or structures. Although they performed similar packaging tasks, they had no organizational affiliation with each other. While the historical PDMs may have satisfied their local organization's functional

needs, they were organizationally “unable to share packaging knowledge.” This is why the historical PDMs are best described as dispersed and not simply decentralized. While historical evidence of dispersed PDMs is incomplete, no evidence was found to directly contradict the proposition.

The influences of organizational behavior on the assembly components PDM and packaging decisions are clear. Their relationship to the different types of packaging designs and subsequent corporate risks are further explored in the intra-case comparison section.

Embedded Case: Heavy Equipment Finished Goods

The physical packaging required for finished construction equipment is very limited and a PDM for the finished goods embedded case could not be identified. This may be a function of the size and durability of the finished goods. Examples of packaging for heavy equipment include blocking materials used in transportation containers or on delivery vehicles. As such, these packaging materials are configured to consumers' orders and are unique to the finished product, transportation mode, and destination. Customized finished goods packaging, where it exists, is removed upon receipt by end consumers, authorized distributors, or at the corporation's dealerships. The organization's lack of finished goods PDMs is further discussed in the intra-case comparison section at the end of the case study.

Embedded Case: Heavy Equipment Service Parts

After-purchase support is an important corporate focus and part of the company's competitive strategy. The corporation's customers use heavy equipment to generate profits on a daily basis. In some cases, heavy equipment operates continuously for days. After-purchase support includes readily available replacement and maintenance parts on a global basis. This is one reason the corporation has a separate division dedicated to service. The service division's global distribution network is designed to satisfy consumers through the timely delivery of service parts. For this reason, the service division is critical to the corporation in sustaining customer loyalty and growing its brand reputation.

Recently completed organizational changes to the PDM have significantly influenced service parts packaging by organizationally integrating the PDM within a supporting activity. Historically, the PDM has been integrated within several of the organization's primary activities including warehouse planning and warehouse operations. Currently, the PDM is integrated within the organization's quality function that is a supporting activity for the entire division. The following sections describe the influences that specific organizational behaviors currently have on packaging decisions. A section that describes how organizational change has influenced the PDMs follows these.

Organizational Accountability

From a value chain modeling perspective, the PDM is integrated within the service division's supporting activity of quality assurance. The PDM's organizational accountability was

established so that service parts packaging can enable efficient and damage-free handling throughout the service division's distribution network.

The PDM's organizational accountability enables packaging decisions to be standardized and globally replicated similar to the way that the division's quality function creates and disseminates quality standards for the entire organization. Evidence of how organizational accountability influences packaging decisions includes the various instruments the PDM uses to standardize packaging designs and packaging decision-making. These include a packaging IT system, standardized packaging work orders, standardized packaging material guidelines and drawings, and standard material specifications.

The packaging IT system standardizes packaging designs so that all elements of a package design are considered and captured by PDMs. The packaging system includes a database that requires PDMs to enter the packaging specifications for service parts in a standardized format that contains prompts for required information. The packaging system interfaces with the division's warehouse management system. It provides warehouse operations with visibility to parts and packaging information to plan product storage and retrieval. The system includes packaged parts information such as unique product orientation requirements during warehousing. It provides PDMs with visibility to specific facility requirements as necessary.

The packaging system is the basis of standardized packaging work orders, which enable PDMs to drive operational efficiencies and maintains quality consistently throughout the value chain. Packaging work orders are part-specific packaging instructions associated with particular orders from parts suppliers. Packaging work orders contain a bill of materials listing all of the

packaging requirements to process a parts order such as specific dunnage, corrugated cartons, and closure methods like tape or staples. Packaging work orders sequentially list the standardized work steps for properly package parts such as how to wrap a part prior to packing or advising packagers to wear gloves preventing perspiration from corroding metal parts. Packaging work orders are customized in that they include parts release quantities and shipping instructions for different locations. In this way the specific requirements of each receiving location can be conveyed to the packagers such as differences between domestic and overseas packaging. PDMs can include remarks and illustrations in the packaging system that are visible at the point of packaging and can provide additional guidance such as descriptions of complex palletization patterns.

Standardized packaging material guidelines, drawings, and material specifications are used by PDMs to ensure efficiencies and consistent quality on a global basis. Packaging material guidelines exist for various types of packaging such as corrugated cartons and poly bags. Each guideline describes: part weight and dimensions; label types and usage; closure materials; and inner wrapping and packing materials. Packaging material drawings are used to illustrate specific details about a standard packaging material such as the dimensional information of a solid fiberboard carton or the size and location of branding graphics. Packaging material specifications cover the standard application, requirements, and identification of different packaging materials such as volatile corrosion inhibitors (VCI) and corrugated fiberboard cartons. Standardized material specifications establish system-wide definitions of packaging materials and are the basis of quality inspections and requests for quotes to potential packaging material suppliers.

Although several of these instruments were initiated prior to the PDM's new organizational accountability, these are now being used globally to leverage packaging standards. These tools do not force a particular service parts package or material on every corporate location globally. Instead, they allow for package customization that can result from local or regional requirements but in a standardized and consistent way.

The PDM has standardized packaging decision-making processes through additional tools that were established at the same time as the PDM's new organizational accountability. These include published "part packaging standards", packaging decision-making "steps", and packaging "decision trees." Each was established by the PDM to ensure consistent decision methodologies for centrally located PDMs as well as decentralized PDMs at third-party packagers or suppliers. "Part packaging standards" are established by the PDM to "provide a uniform, cost effective method of processing & packaging part families." These guidance documents are the culmination of six-sigma projects that seek to improve packaging of select high-value and damage-prone parts commodities such as fuel injectors. These standards provide guidance for future packaging decisions of new parts within these commodities.

The PDM has established part decision-making "steps" that standardize packaging decisions methodologies for the entire organization on a global basis. These eighteen sequential steps prompt decision-makers to consider a variety of organizational packaging needs such as: "Determine part weight, length, width & height."; "Will unpackaged part withstand drop test?"; and "Does part appear theft prone?" The packaging decision-making steps enable optimal packaging by instilling consistency during the design process.

The PDM established a packaging "decision tree" that further standardizes packaging decision-making processes. Although the tree is rudimentary in that it does not determine a specific packaging design for a service part, it does provide decision-makers with additional guidance in selecting one of the different standard packaging types. Packaging types such as corrugated cartons or wooden crates are recommended based on specific part attributes such as weight, dimensions, and susceptibility to corrosion. These parts attributes in combination are the basis of the packaging selection criteria. Once a packaging type is suggested, additional qualifying requirements are presented for further consideration. For example, the decision tree allows for parts that do not require protective packaged because they are durable enough to be shipped "loose." One of the additional qualifying requirements for a loose or unpackaged part is that it must be sold as a single piece and not in multiples or as part of a kit. For example, assuming that a lug nut is durable and meets the preliminary loose part requirement, packaging is still required if the lug nut is sold in multiples of five pieces. Here packaging is required simply to contain the lug nut "kit." The next lowest cost packaging type, poly bags, would then be recommended for consideration. Continuing through the decision tree, the next qualifying requirement for choosing a poly bag is that the lug nut kit must not weigh more than three pounds. If the lug nut kit weighs more than three pounds, the decision tree guides the PDM through the remaining packaging material types until all qualifying requirements are met. The other remaining packaging types include paperboard cartons, corrugated cartons, wooden frames, and wooden crates. Conceptually, if the lug nut kit weighed hundreds of pounds, the decision tree would ultimately recommend a wooden crate packaging type be selected. The decision tree includes functional descriptions of the packaging types such as "contains multiple

pieces." This reaffirms to the PDM that the recommended packaging type properly matches the service part application.

By virtue of being integrated in the division's central quality function, the PDM's accountability is organizationally positioned to make packaging decisions that are optimal for the entire distribution network. By establishing and using standardized packaging design instruments such as the packaging IT system, packaging work orders, packaging material guidelines and drawings, and material specifications, the PDM drives consistency for the entire organization. By establishing standard packaging decision tools such as part packaging standards, packaging decision-making steps, and packaging decision trees, the PDM furthers consistency throughout the organization. The standard packaging design instruments and decision tools are used as training guidelines for new PDMs. This enables the PDM to maintain consistency as employees transition within the organization.

The PDM's authority to establish packaging standards is in large part due to its new organizational accountability. Comparisons with previous PDMs are further presented in the organizational change section.

Organizational Responsibilities

The PDM's organizational responsibilities coincide with those of the quality function in that they support various divisional activities, both primary and supporting, and value chain entities that are external to the organization.

From a value chain perspective, the PDM's organizational responsibilities include primary activities within the service division such as inbound logistics, warehousing operations, outbound logistics; supporting activities of marketing and purchasing; and external entities such

as parts suppliers, contract packagers, and consumers. The PDM is responsible for packaging as it relates to inbound logistics such as the safe and efficient handling of packaged goods from suppliers and parts packagers. The PDM is responsible for packaging as it relates to warehouse operations such as the safe and efficient storing of packaged goods as well as parts retrieval during the customer order filling process. The PDM is organizationally responsible to the outbound logistics function for packaging that minimizes transportation expenses by enabling cube utilization and handling efficiency.

The PDM's responsibilities include the supporting activity of the marketing function. In this way packaging designs are chosen that convey corporate branding and drive customer loyalty and sales. As one employee described the PDM's marketing responsibility, "Definitely a part of the marketing strategy."

Evidence of how the PDM's organizational responsibilities influence packaging decisions is exemplified in the PDM's published "packaging decision priorities." The PDM established packaging decision criteria in order to better define and prioritize the organization's various packaging needs that can readily conflict. The packaging decision criteria reflect the PDM's design responsibilities to external entities in the value chain such as parts packagers, be they parts suppliers or contracted packagers, and consumers. The priorities, definitions, and associated organizational responsibilities are summarized below (Table 6).

Table 6. Packaging Decision Priorities for Heavy Equipment Service Parts

Packaging Decision Priority	Description	Organizational Responsibilities
1. Safety	Provide for safe handling of part	Packagers, Inbound Logistics, Warehouse Operations, Outbound Logistics, Consumers
2. Part Protection	Preserve part from rust, spoilage or damage	Consumers
3. Contain/Measure	Unitize specific quantity or amount of product	Inbound Logistics, Warehouse Operations, Outbound Logistics, Consumers
4. Communicate	Provide information of contents, corporate identification, hazardous material, and special handling requirements	Inbound Logistics, Warehouse Operations, Outbound Logistics, Marketing, Consumers
5. Display/Promote	Help sell product, attract attention	Marketing
6. Carry/Dispense	Allow for ease of order filling, handling and customer unpacking	Inbound Logistics, Warehouse Operations, Logistics, Consumers
7. Warehouse	Allow for efficient storage or “stackability”	Warehouse Operations, Consumers

The first packaging decision priority is “safety”, which packaging fulfills by providing for the safe handling of parts throughout the value chain. This packaging design criterion includes the PDM’s external responsibilities for the safety of the service parts packager who applies the packaging as well as the end consumers who remove the packaging. The safety criterion includes the PDM’s internal responsibilities for the safety of inbound logistics, warehouse operations, and outbound logistics. Satisfying the safety decision priority is the first step towards creating EOP.

The second packaging decision priority is “part protection“, which packaging fulfills by preserving service parts from rust, spoilage, or other damage during distribution. While

protective packaging must account for the entire distribution environment, this design criterion is focused on the PDM's external responsibilities to consumers. Packaging designs that satisfy the part protection priority improve customer satisfaction and contribute to customer loyalty. Protective packaging enables the organization to minimize damage costs. Protecting parts is an important prerequisite to creating EOP.

The third decision priority for packaging is to "contain and measure" which packaging fulfills by correctly containing the required quantities or amount of products. This is particularly important when the selling quantity of a service part is more than a single unit such as a packaged set of four spark plugs or an industrial-sized drum of antifreeze. This design criterion includes the PDM's internal and external responsibilities to inbound logistics, warehouse operations, outbound logistics, and consumers. For the internal entities, packaging that is designed to contain the correct amount of parts is important for inventory management and minimizes inventory shrinkage costs. Externally for consumers, packaging that correctly contains and measures product can mean the difference between timely repairs of equipment or costly down time. Satisfying the "contain and measure" decision priority is important for creating EOP.

The fourth decision priority, "communicate", means that packaging designs accurately "provide information of contents, corporate identification, hazardous material, and special handling requirements." The variety of packaging information that this includes reflects the PDM's internal and external organizational requirements to inbound logistics, warehouse operations, outbound logistics, marketing, and consumers. Satisfying the "communicate" decision priority is a basic packaging function that is important for creating EOP.

The fifth decision priority is “display and promote”, which packaging fulfills by helping to sell products and attract consumer attention. This packaging design criterion emphasizes the PDM’s internal responsibility to the marketing function. Service parts packaging that properly convey branding is a component of EOP.

The sixth decision priority is “carry and dispense”, which packaging fulfills by enabling for the ease of filling orders, handling, and customer unpacking of products. This packaging design criterion includes the PDM’s internal and external organizational requirements to inbound logistics, warehouse operations, outbound logistics, and consumers. Service parts packaging that is easy to use drives efficiencies throughout the value chain. “Carry and dispense” is important for designing EOP.

The seventh priority is “warehouse”, which packaging fulfills by enabling the efficient storage or “stackability” of packaged goods. This packaging design criterion emphasizes the PDM’s internal responsibility to warehouse operations. The ability to efficiently store packaged service parts minimizes the organization’s warehousing costs. This design criterion applies to consumers that store parts for the future maintenance of their equipment. Enabling warehouse efficiencies is a component of EOP.

The organization empowered the PDM to establish and prioritize packaging decision criteria to improve customer satisfaction. Customer satisfaction is not listed as a ranked priority because the PDM considers each listed priority as contributing to the overarching goal of improving customer satisfaction.

The PDM considers cost control as an underlying obligation even though all other evidence indicates that the cost-efficiency of packaging is not always considered. For example,

conspicuously absent from the published packaging decision priorities is “cost”. Even though the PDM’s organizational responsibilities include the purchasing function, cost is not listed as a ranked priority. As one informant described it, “Cost is always in conflict with trying to make things more robust.” The PDM fulfills its organizational responsibility to purchasing by minimizing the use of custom packaging materials that are not as easily leveraged for cost savings compared to standard packaging materials. The PDM minimizes packaging material costs through designs that use the least costly packaging type and amount of material while still providing part protection. The PDM minimizes packaging labor costs through designs that are easily applied at the point of packaging.

The PDM’s responsibilities externally extend to suppliers of packaging materials, contract packaging service providers, and assembly component suppliers that package their parts for service requirements. Packaging designs must be compatible with these external entities’ processes and capabilities. The PDM balances its internal and external packaging responsibilities in order to enable EOP designs.

Organizational Reporting Level

The PDM reports to the quality function’s manager who is a mid-level manager within the service division’s operations and transportation group. The PDM’s organizational reporting level is described as “mid-management.” The PDM’s mid-management reporting level within a support activity empowers the PDM to create EOP on behalf of the organization’s various primary and supporting activities as well as external suppliers and consumers.

Organizational Structure

The PDM's structure is a department segmented into two groups having distinct responsibilities: specifications and materials. The specifications group is responsible for creating packaging standards and packaging specifications. Packaging standards provide general guidance to service parts packagers while packaging specifications are created specifically for each service part. Some of this group's individual PDMs are physically located at contracted packagers.

The materials group is responsible for the research and development of new packaging materials. This enables the organization to pursue new packaging as material science and manufacturing processes evolve. An example of this is the group's research to develop "manufactured wood" pallets. These pallets are constructed of wood fibers that are molded and formed into multi-use pallets that nest together when returned and reduce transportation costs.

In order to coordinate and administer the department's diverse activities, each group has its own first-level manager. This structure permits the department's resources to be focused on their unique responsibilities and work harmoniously to pursue EOP designs for the service division.

Organizational Frames

The different organizational frames of structural, human resource, and symbolic were identified by informants as describing the organization. Organizational frame perspectives provide additional insight to the influences that work environments have on individual PDMs and the packaging department as a whole.

One department leader identified with the structural frame's metaphor of a machine because of the PDM's emphasis on packaging standards that are methodically established and globally applied. Standardizing packaging decision-making meets several of the structural frame's central concepts such as rules, roles, goals, and policies. The organization's structural frame positively influences the service parts PDM by creating a working environment that is methodical and predictable. This appears to minimize other organizational distractions that could negatively influence decision-making and lead to suboptimal or dysfunctional packaging.

Another department leader identified with the human resource frame's metaphor of a family when describing the organization's work environment because the department is a "tight knit group" having both "immediate and extended family members." Here, the former refers to the PDM's departmental employees and the latter refers to dispersed PDMs who are located at various company facilities. These "extended family members" are geographically dispersed but remain accountable to the central packaging department. The organization's human resource frame positively influences individual PDMs by reaffirming that they are part of a larger group regardless of their location. This appears to minimize organizational influences that could arise at remote locations and negatively influence packaging decision-making.

The same department leader identified with the human resource frame's leadership image of empowerment because the department's leadership works to empower individuals and make them "personal accountability" for their packaging decisions made on behalf of the various organizational functions. This is consistent with the human resource frame's basic leadership challenge to align organizational and human needs. This positively influences individual PDMs to pursue EOP designs.

Even though informants less frequently identified with the symbolic frame's metaphor of a temple, it was proposed as accurately describing engineers' attitudes in the packaging materials group. An informant suggested these workers exhibit a "higher calling" and are concerned with "not just getting parts out the door but to try and improve on our market share around the world." This is consistent with the symbolic frame's basic leadership challenge to create meaning in the work place. The symbolic frame was identified with because of its inspirational leadership image. This was indicated because individual PDM's are encouraged by management to "think globally" and "see the big picture." The positive influences of the symbolic frame further enable individual PDMs to pursue EOP.

Overall, the different organizational framing perspectives confirmed the positive influences the organization has on the department and its individual PDMs. No organizational frames were identified with that had negative influences. This suggests that the PDM's working environment is stable and the PDM is able to pursue EOP with little or no negative influences from the organization.

Organizational Change

The service division has made several organizational changes that deliberately improve the PDM's ability to prioritize and replace dysfunctional packaging. Often the changes simultaneously transformed several of the organizational behavior variables that are the subject of this research. The remainder of this section compares the changed organizational behavior variables in the context of both the previous and current PDMs.

Organizational change influenced the PDM by altering its organizational accountability several times, intentionally manipulating the PDMs' design focus to emphasize specific

organizational packaging requirements. Originally, the PDM was organizationally accountable to the warehouse planning team that is integrated in the warehouse operations function. This PDM's organizational accountability emphasized packaging designs that optimized storage locations and handling efficiencies.

Approximately fifteen years ago, the PDM's organizational accountability changed to warehouse operations directly so that packaging decisions would focus on outbound logistical needs in addition to warehousing costs. Although the PDM's changed organizational accountability was meant to expand its organizational responsibilities, it did not enable EOP designs to be pursued. This was demonstrated over time as packaging decisions became primarily focused on lowering warehousing costs that included packaging material expenses. Because packaging performance was deemphasized during this time, dysfunctional packaging designs became more common, customer satisfaction suffered, and warranty claims increased due to part damage.

The most recent organizational change to the PDM's accountability was made to empower the PDM to consider the organization's various packaging needs including customer satisfaction and balance them to create EOP. This occurred within the past three years. The organizational change integrated the PDM within the quality function that is a supporting activity for the service division. Evidence of the influences that organizational change had on the new PDM includes its documented standards for packaging and packaging decision-making processes.

As described above, deliberate organizational changes modified the PDMs' organizational responsibilities to include outbound logistics and then again to include the

organization's various packaging needs and not just warehousing and logistical requirements. The most recent change expanded the PDM's responsibilities to include several internal functions such as warehouse operations, inbound and outbound logistics, marketing, and purchasing as well as external entities such as suppliers, packagers, and consumers. The new PDM's organizational responsibilities are evident by the "packaging decision priorities" that were established and published by the PDM after the last organizational change. Historically, PDMs were not organizationally empowered to consider all of the new PDM's organizational responsibilities and pursue EOP.

Evidence of how organizational change has influenced the PDM to emphasize its new internal responsibilities is exemplified by how the marketing function's packaging needs are considered. Now as a matter of routine the PDM "executes" packaging branding standards as defined by the marketing function. The branding requirements for service parts packaging are meant to more firmly connect service parts consumers to the corporation's brand. By making organizational changes to the PDM, the marketing function is better represented in packaging decisions. The organizational change is consistent with the corporate strategy that emphasizes customer loyalty through the purchase of branded service and maintenance parts.

Another reason the organization made changes to the PDM was to include external value chain entities such as consumers in packaging decisions. One of the primary motives for the PDM's last organizational change was to improve support for consumers and reduce product damage costs associated with dysfunctional packaging designs.

The organization's management became aware that after years of packaging decisions that were primarily focused on reducing warehousing costs, packaging performance as a design

consideration had been deemphasized and dysfunctional packaging had become more common. This began to negatively impact customer satisfaction and threatened customer loyalty. More tangibly, dysfunctional packaging became a cost driver for the organization as the replacement costs of damaged goods increased. The organization's changes to the PDM "re-energized" the PDM to balance consumers' packaging needs with its organizational responsibilities.

Evidence of how organizational change has influenced the PDM to emphasize its external responsibilities is exemplified by the resolution of customer complaints regarding dysfunctional fuel injector packaging. Informant testimonial described a situation where replacement fuel injectors had an unusually high failure rates shortly after being replaced. A spike in customer complaints, combined with warranty claims that were higher than normal, required the PDM investigate the problem. The PDM formed a team of cross-functional subject matter experts. The packaging engineers examined the required packaging and determined that the packager of record had misapplied the packaging. The packaging engineers redesigned and tested new packaging to not only protect the parts but also error-proofed the packaging process. The new packaging design significantly reduced the overall costs to the organization while simultaneously enhancing customer satisfaction.

The organizational changes to the PDM's accountability and responsibilities have demonstrated the value of packaging with respect to the corporation's strategic needs. These include corporate strategies for marketing, brand identification, customer relations, and repair parts pricing. The new PDM is now better enabled to contribute to fulfilling the corporation's strategies.

Organizational change recently raised the PDM's organizational reporting level from non-management to mid-management role coincidental with its integration in a division-wide supporting activity. This has empowered the PDM to create decision-making standards and disseminate them throughout the organization and value chain. Historically the PDMs were not empowered to create packaging standards on behalf of the entire organization. This in part was due to the PDMs lower organizational reporting levels.

Organizational change recently altered the PDM's organizational structure to become an exclusively internal function. Historically, contract packagers were authorized to use their own PDMs to design packaging for new service parts. These third-party PDMs were external and had no organizational accountability to the internal PDM department. Two years ago the organization conducted a six-sigma project that determined contract packagers' designs were sometimes suboptimal. Specifically third-party packaging decision-making lacked quality. This was demonstrated in packaging designs that were not cost effective regarding packaging material and labor costs. Additionally contract packagers' decisions were not timely and caused part availability issues for the organization. As one informant described the contract packagers' design bias, "Sometimes you would see them make decisions that were in favor of the third party provider." For these reasons, the contract packagers' decision-making authority was revoked. The PDM department now has its own individual PDMs located at the contract packagers. This demonstrates how organizational change influenced packaging decisions by expanding the PDM's organizational structure to include remotely located PDMs.

The organization's deliberate changes to the PDM's accountability, responsibilities, reporting levels, and structure influenced the PDM's organizational frames from political to

structural, human resource, and symbolic frames. Organizational framing perspectives showed the influences that organizational changes have had on individual PDMs over time. One informant who experienced multiple organizational changes described the historical PDM's work environments with the political organizational frame and the new PDM's environment with the human resource and structural frames.

When the PDM was organizationally accountable to the warehouse planning team, the political frame's metaphor of a jungle described the work environment. Informant descriptions included terms such as "just trying to survive", "lots of stress", "uncomfortable", and "unfamiliar" to describe the negative influences of the political frame. When the PDM was organizationally moved and became accountable to warehouse operations, the political frame was again used to describe the work environment but this time it was "due to politics." The informant suggested that packaging decisions had been influenced to emphasize select organizational requirements such as the less expensive packaging materials that proved to be dysfunctional.

Frame changes have positively influenced the new PDM's work environment. This is shown by the way informants now relate to the human resource and structural frames. The PDM department employees positively describe their environments as familial and operating smoothly like machinery (i.e. human resource and structural frame metaphors, respectively).

Framed perspectives of organizational change provided deeper insight to the influences that organizational behavior had on individuals. Employee stress, morale, and interpersonal relationships all changed coincidental with organization changes. The former organizational changes to individual PDM's did not improve their work environments. Only the most recent

organizational change that empowered PDM's to govern packaging for the entire organization positively influenced individual PDMs. This has better enabled their pursuit of EOP designs.

Validation of Theoretical Relationships

Organizational behavior has influenced the packaging of service part in several ways. This section addresses the previously presented evidence supporting the research propositions. Additional supporting evidence is presented including any evidence that does not support the propositions.

P_1: There is evidence supporting the proposition that the PDM's organizational accountability influenced packaging decisions. This is evident by the changing packaging design foci of the PDMs coincidental with each new organizational alignment. The influence is evident by the PDM's most recent organizational accountability change that empowered it to created standards for the entire organization. This new authority has been made possible by the PDM's integration within the division's quality function.

The only evidence found that did not support the proposition was a detected shift in the PDM's design focus that occurred without a change to the PDM's organizational accountability. The PDM's organizational move from warehouse planning to warehouse operations was done to emphasize both warehousing and shipping requirements in packaging decisions. The decision-making focus migrated over time to emphasize cost reductions including packaging materials that more favorably impacted the purchasing function. This demonstrates that packaging decisions can be influenced without obviously changing PDMs organizational accountability. Although this evidence does not directly contradict the proposition, it does suggest other organizational behaviors influenced the PDM's focus. Without additional

evidence, it can only be assumed that the influence resulted from less obvious organizational behaviors such as interpersonal relationships between individuals or organizational leaders. This is consistent with the political frame's central concepts of organizational politics and power as the basis for decision-making. No other evidence was found that contradicted the proposition.

P_2: There is evidence supporting the proposition that the PDM's organizational responsibilities influence packaging decisions. Supporting evidence includes the PDM's packaging decision priorities. This packaging decision-making tool is a comprehensive list of prioritized packaging decision criteria that represent a wide variety of packaging needs for both the organization and its external value chain partners.

Historically, PDMs' organizational responsibilities were seldom comprehensive and decision priorities changed coincidental with changing organizational accountabilities. Evidence includes repeated expansions to decision-making responsibilities that resulted from organizational accountability changes. Historical data shows that these simple expansions were not always balanced and dysfunctional packaging designs resulted. No evidence was found to directly contradict the proposition.

P_3: There is evidence supporting the proposition that the PDM's organizational reporting level influences packaging decisions. The new PDM is mid-management and integrated in a division-wide supporting activity. This empowers the PDM to create packaging decision-making standards and disseminate them throughout the organization and value chain.

Historically the PDMs were not empowered to create packaging standards on behalf of the entire organization. This in part was due to their lower organizational reporting levels.

The only evidence that does not support the proposition is that, although previous PDMs were not organizationally empowered, it is not explicitly clear if this was caused by the PDMs' lower organizational reporting levels or due to organizational accountability and responsibilities. It is likely that previous PDMs' lack of empowerment resulted from these organizational behaviors in some combination. While this lack of historical distinction does not fully support the proposition, it does not contradict the proposition. No other evidence was found to directly contradict the proposition.

P_4: There is evidence supporting the proposition that the PDM's organizational structure influences packaging decisions. This includes the new PDM's departmental structure that includes two different groups having distinctly different packaging tasks and leaders. This structure enables the PDM to perform packaging research while creating packaging requirements and establishing packaging standards. The influence is demonstrated by the PDM having expanded its human resources by collocating individual PDMs at contract packagers. This was done to improve the quality and timeliness of packaging decision-making for the organization.

Only minor evidence exists that does not support the proposition. Because the historical PDMs' organizational structures of are not know in full detail, previous PDMs may have had departmental structures and were not just individual PDMs. It can be assumed that if they were departments integrated within primary activities, they were not as large as the new PDM department that supports the entire division. It can be assumed that if they had departmental

structures, their resources were not segmented into two groups assigned to distinctly different tasks requiring two managers. The lack of detailed historical evidence does not fully support or contradict the proposition. No other evidence was found that directly contradicts the proposition.

P_5: There is evidence supporting the proposition that organizational frames influence PDMs. This includes employee testimonials regarding their work environments using organizational framing perspectives. Informants consistently identified with the political frame's metaphor, leadership images, and central concepts to describe the negative influences of the different historical PDMs' work environments. Informants identified with the human resource and structural frame's metaphors and leadership images to describe the positive influences of the new PDM's work environment. No evidence was found that contradicts the proposition.

P_6: There is strong evidence supporting the proposition that organizational changes influence PDMs. Evidence includes the change that organizationally moved the PDM from the warehouse planning function to warehouse operations. The change not only altered the PDM's organizational accountability but its organizational responsibilities as well. This was intentionally done to broaden the PDM's organizational responsibilities to include outbound logistical packaging needs along with warehousing requirements.

The change that organizationally moved the PDM from warehouse operations to the division's quality function, not only altered the PDM's organizational accountability but its organizational responsibilities, reporting level, and structure, and frame as well. These changes

were strategically made to support evolving organizational strategies such as bolstering customer loyalty by improving service parts protection. The new PDM is organizationally empowered to govern packaging decisions for the division because of its new organizational accountability, responsibilities, reporting level, and structure.

All of the researched organizational behavior variables were modified to better enable the PDM to pursue EOP designs. The new PDM is organizationally accountable to, and integrated within, a divisional supporting activity. This expanded the PDM's authority and has lead to packaging standards on behalf of the entire organization. The new PDM's organizational responsibilities have been expanded and prioritized that further standardizes packaging decision-making to benefit the entire organization. The new PDM's organizational reporting level has been elevated to further empower it. The new PDM's structure has added resources and created two task-focused groups. The PDM's organizational frames have changed coincidental with other organizational behavior changes. This has positively influenced the PDM to better perform their expanded organizational duties. All of the changed organizational behavior variables have positively influenced the organization's service parts packaging. EOP designs are now being pursued that fulfill the organization's strategic needs. No evidence was found that contradicts the proposition.

The influences of organizational behavior on the service parts PDM and packaging decisions are clear. Their relationship to the different types of packaging designs and subsequent corporate risks are further explored in the next section.

Heavy Equipment Manufacturer Intra-Case Comparisons and Contrasts

Comparing and contrasting the influences of organizational behavior between embedded cases provides additional insight to the propositions including the theoretical relationships to packaging designs and corporate risks. This section begins by comparing and contrasting the assembly components and service parts PDMs with respect to each of the researched organizational behavior variables. A summary of the historical and current organizational behaviors for all PDMs is then presented. A tabular summary of the company's current and historical PDMs is presented. The intra-case comparison section concludes by discussing the corporate risks that resulted from, or were avoided by, packaging designs at the heavy equipment manufacturer.

P_1: Regarding organizational accountability, both the assembly components and service parts PDMs are currently accountable to supporting activities for their organizations. This empowers them to make packaging decisions on behalf of the entire organization and not be focused on, or overly influenced by, any one particular primary activity. The influences that organizational accountability has on packaging decisions are readily demonstrated by packaging standards and standardized packaging decision-making processes that were established by each organization's empowered PDMs.

Historical evidence indicates that when both sub-case PDMs were organizationally accountable to various primary activities and some organizationally suboptimal packaging designs resulted. Suboptimal designs emphasized the particular packaging needs of the organizational function that the PDMs were accountable to and discounted other organizational packaging needs. There are examples of dysfunctional packaging designs that

resulted from the PDMs' previous organizational accountabilities. In these cases, packaging failed to meet some of the organization's basic packaging requirements such as product protection.

The two PDMs' organizational accountabilities evolved at different times as the corporation's strategies evolved. The service parts PDM was integrated in a division-wide supporting activity years before the assembly components PDM organizationally emerged from its primary activity. It was the packaging-related benefits demonstrated in the service division that led the corporation to make strategic changes to assembly components packaging. Corporate leadership understood that through proper governance, assembly components packaging could have the same strategic value as that of service parts packaging.

The PDMs' organizational evolution is demonstrated by comparing the two packaging IT systems in detail. The service parts packaging system was initiated more than ten years ago and has been continually enhanced. The assembly packaging system has not been fully launched and is currently being tested in the pilot phase. The realized benefits of the service parts packaging system include standardized packaging designs, availability of packaging specifications to internal and external users, and visibility to packaging data for organizational planning purposes. Because of the proven value of the service division's packaging system, corporate leadership's strategic plan for assembly components packaging included a similar packaging IT system. Rather than create an entirely new system, the service parts system was adapted and customized to the assembly operations' unique packaging needs. Human resources were allocated from the service division PDM's department to provide expertise to create the assembly components packaging system.

Employees that have worked in both organizations provide deeper insight by their ability to directly comparing the two organizations with respect to packaging. One informant stated that packaging was “easier” for service parts because packaging costs were centralized with respect to organizational budgets. Comparatively, assembly components packaging budgets were either “uniquely explicit at each facility” or “non-existent.” From a systems perspective, this made capturing and disseminating data such as packaging material costs much more difficult for assembly parts. It was stated that the service parts packaging system was easier because it was a comparatively “smaller world.” Packaging for assembly components was both “diffuse” and “different for each location.” This highlighted the fact that the service parts PDM had well-established standards while the assembly components PDM’s standards were still evolving.

From a systems and data availability perspective, the organizationally less-mature assembly components PDM is not yet fully able to support several strategic packaging-related opportunities. This includes the assembly operations’ inability to leverage packaging materials costs through consolidated purchases. This strategic value is demonstrated by the service division’s ability to quickly query their system for packaging materials cost and demand data including where specific packaging materials are consumed. Because any existing assembly components packaging data is still in aggregate form at best, forecasting the demand of packaging materials at each assembly facility is problematic. Similarly, the assembly operation’s information gap currently inhibits packaging related opportunities for the quality and logistics functions. The information gap inhibits collaboration between the corporation’s two PDMs. Although the two organizations once had “zero collaboration”, they are now working towards

standardizing common packaging materials, centralizing accounting, and partnering in knowledge transfers. Capturing all of these strategic packaging opportunities will be better enabled once the new assembly operation's packaging system is full launched.

Another factor that contributes to the PDMs' different organizational maturity is disclosed in their organizational histories. While both PDMs' organizational accountabilities were changed from primary to supporting activities, the assembly parts PDMs were organizationally dispersed and worked independently. This made changing the different assembly parts PDMs' organizational accountability more complex. For example, the budgets of the dispersed PDMs were "non-existent" or "not explicit" and were unique to each facility. Contrastingly, the historical service parts PDMs were centrally located, albeit within primary activities, and they had established budgets. Changing the service parts PDMs' organizational accountability was comparatively easy requiring only minor budget transfers.

In summary, the organizational accountability of two organization's PDMs evolved similarly but at different times. The service parts PDM has been enabled to pursue EOP for years while the assembly components PDM is still working towards this goal. Both PDMs are organizationally empowered to avoid suboptimal and dysfunction packaging designs. This will minimize risks for the service division, the assembly operations, and the corporation. For the service division, brand reputation and consumer loyalty are being strategically protected through service parts packaging. For both organizations, avoidable costs are being minimized through methodical packaging decision-making. Changes to the organization's accountability of their PDMs are contributing to corporate profits.

P_2: Regarding organizational responsibilities, both PDMs are currently responsible for the packaging needs of multiple primary and supporting activities. This broad range of organizational decision-making responsibilities enables both PDMs to pursue EOP and not emphasize any one particular organizational activity's packaging needs. The influences of organizational responsibilities on packaging decisions are readily demonstrated by the PDMs' guidance documents. The service parts PDM's "Packaging Decision Priorities" and the assembly components PDM's "Packaging & Shipping Guide" exemplify how their organization's diverse packaging requirements are accounted for and balanced.

Historically, both sub-case PDMs had limited or unbalanced organizational responsibilities (e.g., a focus on a select primary activity's packaging needs). This was coincidental with their previous organizational accountabilities. The resulting packaging designs were suboptimal for each organization's diverse packaging requirements, some were even dysfunctional. These packaging decisions emphasized short-term gains such as material cost reductions over long-term needs such as brand protection. The PDMs' previously narrow organizational responsibilities impeded their organization's emerging business strategies such as transitioning from a *push* production system to a *pull* production system.

Changes to both PDMs' organizational responsibilities were coincidental with changes to their organizational accountabilities. These organizational changes were strategically made to influence packaging decisions and enable EOP designs. The changed organizational behaviors minimized corporate risks and enabled support for emerging organizational strategies.

The clearest difference between the two PDMs' organizational responsibilities is a matter of timing and organizational maturity. The service parts PDM's organizational

responsibilities evolved before the assembly components PDM's. While risks to the corporation continued due to unchanged assembly components packaging, packaging benefits were being achieved in the service division.

The successful organizational transition of the service parts PDM demonstrated strategic value of packaging to the corporation. It appears that the subsequent organizational changes that were made to the assembly components PDM, specifically organizational accountability and responsibilities, were patterned from the service division's PDM. Shifting the assembly PDM's accountability from a primary activity to a supporting activity broadening the PDM's organizational responsibilities and enabled packaging-related strategies and reduced corporate risks.

P_3: The influences organizational reporting levels have had on packaging decisions are evident in both organizations. Both PDMs are currently mid-management in their organizations with the assembly components PDM reports to the supply chain director and the service parts PDM reports to the division's quality manager. The service parts PDM is now empowered to create packaging standards, in part, as a result from being organizationally elevated and reporting to the division's manager of quality. The assembly components PDM is now empowered to assist suppliers with their packaging issues, in part, as a result from being organizationally elevated and reporting to the supply chain director.

Previously both PDMs were first-level management at best, which inhibited their authority and negatively influenced packaging decisions. For example, they were unable to create packaging standards or assist suppliers. Subsequently suboptimal packaging designs resulted such as the dysfunctional packaging of engine starters for assembly operations. Once

the assembly components PDM was organizationally enabled to assist the suppliers of starters, over a million dollars of net savings were achieved for the organization. This further demonstrates the relationship between organizational reporting levels and corporate risks.

Although the reporting levels of the two PDMs' are both historically and currently very similar, the timing of their organizational evolution differs. Similar to changes in their organizational accountability and responsibilities, the organizational reporting level of the assembly components PDM lagged behind the service parts PDM. As previously discussed, this prolonged the corporate risks for the assembly operations when compared to the service division.

The reporting levels of both organizations' PDMs now better enable them to make packaging decisions on behalf of their entire organizations and pursue EOP designs. They are now better enabled to support their organizations' emerging business strategies.

P_4: Regarding PDM's organizational structure, both PDMs are currently organized as departments albeit of different sizes. The service parts PDM is larger and structured as a department having two sections; whereas, the assembly components PDM's structure is a small department resembling a team.

The influences organizational structures have had on packaging decisions are evident in both organizations. Examples include the service parts PDM's corporate projects that are commodity based and require significant dedicated resources. Packaging decisions made through these project create "replication knowledge" that are potentially applicable to other commodities packaging. These projects have reduced packaging material costs, improved quality, improved safety, and reduced logistical costs. Similarly, the service parts PDM uses its

dedicated Six Sigma resource to gather the best packaging practices found through corporate packaging projects and replicate those packaging designs and processes in new packaging projects. Here again the packaging project focused on starters would not have been possible without the PDM's departmental configuration and dedicated resources. Both PDMs' organizational structures empower them to deploy their dedicated resources at their discretion in pursuit of EOP.

Historically, all of the PDMs' resources were not centrally contained or managed in a departmental structure. This negatively influenced their packaging decisions and sometimes resulted in suboptimal and dysfunctional packaging. For example, contract packagers who were external to the organization often created packaging designs that were suboptimal and favored the packagers' needs over the corporation's. This created several risks for the corporation including reduced profits due to unnecessary and costly packaging materials. The assembly components PDMs were dispersed so packaging designs may have been locally adequate but were not leveraged for the entire organization. This introduced risks to the corporation such as avoidable costs that negatively impacted profits. These examples demonstrate the relationship between PDMs' organizational structure and corporate risks.

As with all of the previously described organizational behaviors, the contrast between these PDMs' organizational structures is a matter of timing. Although the structures of the two PDMs' are both historically and currently very similar, the timing of their organizational evolution differs. The assembly components PDM lagged the service parts PDM as they both evolved into centralized departmental structures. This prolonged the risks for the corporation's assembly operations compared to those of the service division.

Both PDMs' organizational structures now better enable them to make packaging decisions on behalf of their entire organizations and pursue EOP designs. They are now better able to reduce packaging-related corporate risks.

P_5: Regarding organizational frames, both PDMs currently fit the structural and human resource frames. Their work environments reflect methodical decision-making processes while emphasizing personal relationships. These frames enable the PDMs to pursue EOP without the burden of performing in a political environment. The influences of these favorable frames are evident in informant testimonials that convey pride in work and demonstrate empowered individuals. These positive influences contribute to the creation of packaging designs that minimize organizational risks.

Historically, both PDMs' previous political organizational frames were often negative working environments. This is evident by informant descriptions of decision-making performed in politically framed organizations. There power, conflict, and organizational politics influenced packaging decisions and individual PDMs. Sometimes this resulted in suboptimal and even dysfunctional packaging designs. An example of this was the service parts PDM's attempted to improve fuel injector packaging. Because organizational politics undermined the PDM's authority, implementation of the cost-reducing packaging design was postponed for nine months. In the interim the suboptimal and dysfunctional fuel injector packaging sustained risks to the corporation in the form of reduced profits and deteriorating customer loyalty. Similarly, the assembly components PDMs experienced delays in implementing packaging solutions to battery packaging problems. Here too corporate risks included reduced profits while the

organization's political were resolved. These examples demonstrate the relationship between PDMs' organizational frames and corporate risks.

It is unknown if management from either organization deliberately made changes to their PDM's organizational frames. Generally, the frames of both organizations' PDMs transitioned from having negative influences to positive ones. This appears to be coincidental with changes to other organizational behaviors as previously described.

As with all of the previously described organizational behaviors, the contrast between the two PDMs' organizational frames is a matter of timing. The two PDMs' organizational frames are very similar both historically and currently. The timing of their organizational transitions differs. Changes in organizational frames for the assembly components PDM lagged behinds those of the service parts PDM. This delay is occasionally still evident as the assembly components PDM extends its authority throughout the organization. It appears that corporate culture change is not always instantaneous or necessarily thorough. The prolonged transition sustained risks for the corporation's assembly operations compared to those of the service division.

Both PDMs' organizational frames now have positive influences on PDMs and packaging designs. EOP designs are now being pursued that reduce packaging-related corporate risks.

P_6: Regarding organizational change, both PDMs have experienced significant changes that impacted all of the researched behavioral variables. Both organizations deliberately made changes to their PDMs in order to support emerging corporate strategies. In the service division, the emerging strategy was to better support finished goods consumers through the timely delivery of damage-free service parts on a global basis. For assembly operations, the

emerging strategy was to shift to a pull production system that required better logistics including the ability to accurately schedule assembly component shipments for all production facilities worldwide. Both organizations recognized the strategic value of packaging with respect to their evolving strategies and made organizational changes to their PDMs.

Deliberate changes to structure-based organizational behaviors, such as PDMs' accountability and responsibilities, were very obvious. Accountability changes from primary to supporting activities empowered the PDMs by eliminating the packaging design bias of their immediate superiors. Responsibility changes were broadened for the PDMs enabling them to pursue EOP designs.

Deliberate changes to organizational behaviors that are both structure and relationship-based, such as PDMs' reporting levels and their structure, were obvious. Elevating PDMs' reporting levels and structurally supporting them with dedicated resources empowered them within their organizations. This not only enabled them to better pursue EOP, it signaled to other organizational activities that corporate strategies had evolved requiring organization-wide commitment.

Changes to the relationship-based behavior of organizational frames appear to be less intentional and were coincidental with other changed behaviors. As such, these are much less obvious but none-the-less significant, particularly for individual PDMs. Moves from negatively influenced work environments to positively influence ones has enabled the pursuit of EOP. While seemingly not deliberately altered, both PDMs' new organizational frames foster an environment that ultimately is reducing corporate risks through packaging designs.

Although the history of organizational changes for both PDMs was very similar, the service parts PDM experienced an additional organizational change to its accountability and responsibilities that the assembly components PDM did not undergo. The service parts PDM's accountability was changed from the warehouse planning activity to the warehouse operations activity. This was intentionally done to broaden the PDM's responsibilities to include logistical costs. While well intended, this ultimately did not yield better packaging designs but instead some dysfunctional packaging designs resulted. This demonstrates that emerging strategies can cause organizational changes for PDMs that negatively influence packaging decisions and PDM. This in turn can result in suboptimal and dysfunctional packaging designs that can increase corporate risks.

The two PDM's experienced organizational changes at different times. This in part was due to new organizational strategies that emerged at different times. It is due in part to the service division having previously demonstrated the strategic value of packaging. The assembly organization learned from the service division's success and pursued similar organizational changes that have enabled its PDM to better support evolving strategies. While the assembly components PDM is now better supporting organizational strategies, the delay in organizational change sustained suboptimal and dysfunctional packaging designs. This put the corporation at risk including reduced profits and customer loyalty.

The following table summarizes the organizational behaviors that influence the heavy equipment manufacturer's assembly components and service parts PDMs (Table 7). Historical organizational behaviors that influenced the PDMs are included.

Table 7. Comparison of the Heavy Equipment Manufacturer's PDMs: Assembly Components and Service Parts

PDMs	Accountability (P1)	Responsibilities (P2)	Reporting Level (P3)	Structure (P4)	Frames (P5)	Change (P6)
Assembly Components Current	Global Supply Chain (Supporting Activity)	Inbound Logistics, Production Operations, Purchasing, Suppliers	Mid-Management	Small team with a manager	Human Resource; Political (positive)	P1 - P4, (P5); Create central packaging authority for emerging "pull production" strategy; Optimize (leverage) packaging; Eliminate dysfunctional and suboptimal packaging
Assembly Components Historical (Initial)	Various local primary & supporting activities	Various local foci (Purchasing, Supply Chain, Safety, Quality)	Non-Management	Dispersed individuals	Political (negative)	not applicable
Service Parts Current	Quality (Supporting Activity)	Inbound Logistics, Warehouse Operations, Outbound Logistics, Purchasing, Marketing, Suppliers, Consumers	Mid-Management	Department with a manager and two groups with managers	Structural, Human Resource, Symbolic	P1 - P4, (P5); Eliminate dysfunctional packaging due to Warehouse Operations accountability & Purchasing-focused responsibilities; Repair Customer relationships
Service Parts Historical (Initial)	Warehouse Planning (Primary activity)	Warehouse Operations	Non-Management	Small group and external PDMs	Political (negative)	not applicable
Service Parts Historical (1^{st} change)	"	Add Outbound Logistics (Purchasing)	"	"	"	P2; Add focus on lowering outbound logistical costs

While the assembly components and service parts PDMs organizationally mirrored each other despite timing differences, the lack of a finished goods PDM is curious. Arguably, the nature of the company's finished goods does not require extensive packaging. But this does not necessarily preclude the existence of packaging-related opportunities or corporate risks. One informant conveyed that the potential benefits of a finished goods PDM had been suggested to the corporation's upper management. To date, no organizational action has begun to create a finished goods PDM. There is no evidence that the company is planning for a finished goods PDM in the near future.

Case 2: Automobile Manufacturer

This Fortune 500 automobile manufacturer produces passenger cars and commercial vehicles throughout the world. Although it is headquartered outside of the US, a separate US division exists and acts as a separate profit center. The US division does not have its own manufacturing facilities and instead produces vehicles at a single facility through a joint operating agreement with a domestic automobile manufacturer. For this reason a large portion of its vehicle components are designed, manufactured, packaged, and imported for assembly in the US. Repair parts are also imported from the same overseas sources.

The following sections summarize each embedded sub-case with respect to the research propositions, supporting evidence, and validation of the theoretical relationships. The sub-case sections are then followed by an intra-case comparison focused on the proposed theoretical relationships including how packaging designs contributed to or reduced corporate risks. The intra-case comparison includes a summarizing table for the PDMs with respect to the research propositions covering current and historical states. The case study summary concludes with a brief discussion regarding the lack of a finished goods PDM and the potential corporate risks.

Embedded Case: Automobile Assembly Components

The following sections describe the influences that specific organizational behaviors currently have on assembly components packaging decisions. A section that describes how organizational change has influenced the PDMs follows these.

Organizational Accountability

The PDM for assembly components is integrated in the manufacturing plant's material handling function. From a value chain perspective, the material handling function is part of the company's primary activity of operations. The PDM's organizational accountability emphasizes packaging designs for the efficient damage-free handling of assembly components to the vehicle assembly line. These packaging decisions directly support the profitable mass-production of automobiles at the manufacturing facility.

Organizational Responsibilities

The PDM's organizational responsibilities include a variety of entities within the primary activity of assembly operations. These include: end users on the assembly line, corporate safety, union safety, and industrial engineering. The PDM's responsibilities include the inbound logistics function, which is a primary corporate activity, for optimal space utilization through packaging designs. The PDM is responsible to the purchasing function, which is a corporate supporting activity, for the design of cost-effective packaging. The PDM is responsible to the quality function, which is a corporate supporting activity, for packaging designs that maintain assembly component quality. The PDM's responsibilities extend externally to include assembly component suppliers. Packaging designs must be compatible with suppliers' manufacturing and handling processes. These diverse organizational responsibilities sometimes conflict and require the PDM to balance the organization's competing needs.

Organizational Reporting Level

The PDM's organizational reporting level is non-management and directly reports to the material handling supervisor. The PDM's reporting level enables packaging decisions to be made within a cross-functional team comprised of other non-management peers. Team members have no organizational superiority over other participants so packaging decisions are collaborative not dominated by any particular organizational function's packaging requirements. These peers approve the PDM's designs in pursuit of EOP.

Organizational Structure

The PDM's structure is an individual specialist within a cross-functional team. This organizational configuration enables packaging decisions to be collaboratively made with team members representing other stakeholders. Other organizational functions that are represented in weekly team meetings include union ergonomics, corporate safety, industrial engineering, end users on the assembly line, quality, and material handling. Purchasing, logistics, and suppliers are engaged as needed. The PDM's organizational structure, that of an individual specialist participating in a cross-functional team of peers, allows for openly balancing the packaging needs of the represented organizational functions. Packaging design approval from each team members indicates their concurrence that EOP designs are being created and result from this organizational configuration.

Organizational Frames

The PDM describes the work environment as having the characteristics of the structural, human resource, and political frames. The structural frame's metaphor of a machine was

identified by the PDM because the cross-functional team performs “like clockwork”. The human resource frame’s leadership image of empowerment was identified with because, as the PDM describes it, “as a department of one you inspire yourself”. The PDM identified with the political frame’s metaphor of a jungle coincidental with occasional team conflicts. For the PDM’s cross-functional team comprised of non-management peers, occasionally conflicts arise and may not be readily resolved. This was further explored through narrative questions surrounding unfavorable packaging decision-making incidences.

One example of team conflict involved the design of racks used to deliver door panels to assembly operations. The door panel supplier provided prototype racks to the cross-functional team for their review and approval. Team members representing assembly operations' end users suggested packaging design changes. This led to a protracted discussion where individual team members defended their specific packaging needs and argued for priority over other functions’ packaging needs. This detoured the team from its typical collaborative decision-making process. The door panel rack was completely redesigned after all team members’ packaging needs were summarized. Final team approval was given but only after several design iterations occurred. It was suggested that in this incidence, the team members atypically “lost focus” on the team’s objective in favor of their own interests. This incident illustrates how team collaboration can be potentially compromised due to powerful individuals or individuals seeking more authority. The team that typically functions like a machine, and as a family of peers, became conflicted by attempts to influence packaging decisions through individuals’ reach for power. As the PDM further described that working environment, “The whole packaging

function is a jungle sometimes. You have those days that are crazy and it can directly shut down the plant and you have to resolve it."

Although the final packaging design for door panels was judged to be optimal for the organization by the team, the example reveals the risks to the organization related to assembly components packaging. Tangible losses were incurred by the organization due to the work hours lost by team members while arguing as well as the incremental work required by team members to redesign a packaging solution. The example indicates other risks to the automobile manufacturer if packaging decisions are not made on a timely basis. Expendable packaging for assembly components would be used in the interim until a final packaging design is approved. The costs to design, procure, and dispose of expendable packaging is suboptimal for the organization. Interim packaging can reduce manufacturing throughput and quickly become very costly. Interim packaging can also be dysfunctional (e.g., plastic trim pieces can be damaged by corrugated fiberboard abrasion, etc.). Additional risks even include delays in launching new vehicles. Such delays not only impact the operation's ability to quickly reach profitable mass production but this can put the company's brand reputation at risk by delaying new product entry into markets.

Organizational Change

Organizational changes have influenced the PDM's organizational accountability, responsibilities, and structure. Organization changes altered the PDM's organizational accountability several times. For approximately ten years, the PDM had been accountable to the purchasing function. This enabled the PDM to participate in the function's value management efforts to monitor the design and cost-effectiveness of assembly components

packaging. Then, coincidental with organizational changes to the corporation's joint operating arrangement, the PDM was made accountable to the organization's product launch group. This groups is integrated in assembly operations that is a primary activity. This was strategically done to mirror the organizational accountability of the corporate manufacturing partner's PDMs. This is an example of how organizational change at the highest corporate level can impact the PDM's accountability at the local level. It appears that the PDM's participation in the resulting cross-functional team enabled the purchasing function's need for cost-accountability to be maintained even though the PDM's organizational accountability had changed.

Very recently the PDM's organizational accountability was changed again and is currently accountable to the material handling function. This function is embedded in assembly operations. This change was made in response to local organizational workload issues. The PDM's accountability was changed when a material handling engineer took another job and that employee's duties were incrementally assigned to the PDM. This not only changed the PDM's organizational accountability but it expanded the PDM's workload beyond typical packaging decision-making. Because this organizational change occurred within the last year, the workload implications for the PDM's ability to pursue EOP could not be evaluated. It appears that the organization has assumed that this change will not introduce packaging-related risks to the organization such as a focus on material handling needs over other functions' packaging needs or a diminished packaging decision-making work effort.

The PDM's organizational responsibilities were changed and expanded over time coincidental with major design "refreshening" of vehicles. The organization used the cyclical refreshing of automobile vehicle designs to add organizational responsibilities to the PDM every

four to five years. The PDM's responsibilities expanded from the packaging needs of the material handling and transportation functions to include end users on the assembly line and the corporate safety function. Another vehicle refreshing cycle further expanded the PDM's organizational responsibilities to include the packaging needs of the employee union's safety function and the industrial engineering function.

The influences that organizational change had on the PDM's responsibilities are evident by the organization's packaging specification template. This form is used by the PDM and the cross-functional team to define packaging designs for specific assembly components. Because each team member must concur with every new packaging design, new packaging specifications require signatures from all of the represented organizational functions. As the PDM's organizational responsibilities expanded over time to include more functions, the standard packaging specification template was modified to include more signature boxes for the additional organizational functions. This demonstrates how expanded responsibilities enable the PDM to pursue packaging designs that are better for the organization.

Although the PDM's organizational responsibilities expanded, the PDM's organizational structure of an individual in a cross-functional team did not directly change. Organizational change did directly change the composition of the cross-functional team. Team membership expanded to include additional representatives from organizational functions. Again, additional signature blocks on the PDM's packaging specification form indicate the influence that organizational change had on the PDM's team structure. This demonstrates that as the organization made strategic changes regarding the packaging of assembly components, and the

PDM's structure was altered coincidental with expansions to the PDM's organizational responsibilities.

Validation of Theoretical Relationships

Organizational behavior has influenced the packaging of assembly components in several ways. This section addresses the previously presented evidence supporting the research propositions. Additional supporting evidence is presented including any evidence that does not support the propositions.

P_1: There is evidence supporting the proposition that the PDM's organizational accountability influences the packaging decisions. This is evident by the PDM's different organizational accountabilities over time beginning with the purchasing function, followed by the new product launch group, and the current material handling group. Each change was deliberately made by the organization so that packaging decisions would be influenced by, or focused on, the PDM's parent activity. For example, while the PDM was accountable to the purchasing function, packaging costs were a clear focus of packaging decisions. Later, when the PDM was made accountable to the new product launch group, packaging decisions were refocused on the timely development of assembly components packaging that directly benefitted assembly operations. This shift in packaging design emphasis was described by the PDM, "They thought it was a good idea [to] move to work on new models directly, [and] work on cost when necessary."

The PDM's current accountability, to the material handling group, specifically adds non-packaging decision-making workload to the PDM. At this time it is unclear to what extent this will negatively impact the PDM's ability to pursue EOP given the additional workload. It is

unclear if the PDM's new organizational accountability will inadvertently emphasize the material handling function's packaging requirements over other non-operation functions' needs. This evidential gap does not contradict the proposition and no evidence was found that directly contradicted the proposition.

P_2: There is evidence supporting the proposition that the PDM's organizational responsibilities influence packaging decisions. This evidence includes the PDM's expanded organizational responsibilities demonstrated by both the cross-functional team's expanded representation and the coincidental changes to packaging specification template. As organizational responsibilities were added to the PDM over time, the cross-functional team membership correspondingly increased. The packaging specification form was amended to physically add space for the additional approval signatures of new team members. No evidence was found to contradict the proposition.

P_3: There is evidence supporting the proposition that the PDM's organizational reporting level influences packaging decisions. This is evident by the PDM's cross-functional team that is comprised of non-management peers. This fosters collaborative decision-making without team member domination due to higher organizational reporting levels or hierarchical stature. Per the PDM, "No one is lower than the other person." While this team construct has not been conflict free, it continues to endure the organizational changes made to the PDM. No evidence was found that contradicted the proposition.

P_4: There is evidence supporting the proposition that the PDM's organizational structure influences packaging decisions. The evidence includes the PDM's cross-functional team that is

designed to balance the organization's diverse packaging requirements. The team structure has only changed over time to add representatives from additional organizational functions. No evidence was found that contradicted the proposition.

P_5: There is evidence supporting the proposition that organizational frames influence PDMs. The evidence of this includes the PDM's performance in the working environment. The organization's structural and human resource frames are evident by the PDM's cross-functional team that is methodical and empowered. When team decision-making becomes problematic, the political frame reveals that the team's success does not come from the authority of any particular member over another. Instead, the team's power and authority comes from the collaboration of equal peers. As the PDM describes, "The biggest thing [is] trying to make everyone happy from a design." Evidence of changes in the historical PDM's organizational frames is limited. This evidential gap does not contradict the proposition and no other evidence was found that contradicted the proposition.

P_6: There is evidence supporting the proposition that organizational changes influence PDMs. Evidence includes the strategic organizational changes made to the PDM's accountability, responsibilities, and structure. Changes to the PDM's organizational accountability shaped and refocused packaging decision-making on particular organizational packaging needs (i.e. from purchasing to assembly operations). The PDM experienced a relatively recent change to its organizational accountability. The PDM now reports to the material handling function due to a consolidated workforce. The PDM now has incremental

non-packaging decision-making duties. Any impact on packaging decision-making resulting from this change has not yet been witnessed. This evidential gap does not contradict the proposition.

Changes to the PDM's organizational responsibilities evolved over time to include the packaging requirements of additional organizational needs. This was done so that the PDM could pursue packaging designs that were better for the organization.

Changes to the PDM's organizational structure were evident in the expanded cross-functional team. Additions to the PDM's team were coincidental with expanding organizational responsibilities and the pursuit of better packaging designs for the organization. No evidence was found that directly contradicted the proposition.

The influences of organizational behavior on the assembly components PDM and packaging decisions are clear. Their relationship to the different types of packaging designs and subsequent corporate risks are further explored in the intra-case comparison section at the end of the case study.

Embedded Case: Automobile Finished Goods

The physical packaging required for finished automobiles is very limited. Examples include protective films for bumpers, plastic bags for seats, and disposable floor mats. These packaging materials are often included for component protection during the vehicle assembly process. Any finished goods packaging is removed at dealerships when vehicles are being prepared for sale. While this type of packaging was explored with the assembly components PDM, the service parts PDM, and the corporation's manufacturing partner, a PDM for the finished goods embedded case could not be identified.

A theoretical scenario of damaged finished goods (i.e. post-production vehicle damage) was used with informants to explore the apparent gap in packaging decision-making authority. It was determined that any feedback regarding finished goods damage would be sent directly to corporate headquarters. Only then might the parent company's authorities provide some guidance for improving finished goods handling or packaging, if it were deemed necessary. For this reason the embedded case study of packaging decision-making for finished automobiles is very limited. This is further discussed in the intra-case comparison section at the end of the case study.

Embedded Case: Automobile Service Parts

Service is a primary activity of the corporation and is a separate division. The service division procures, packages, and distributes parts that are required for maintaining and repairing purchased automobiles. The following sections describe the influences that specific organizational behaviors currently have on service parts packaging decisions. A section that describes how organizational change has influenced the PDMs follows these.

Organizational Accountability

The service parts PDM is accountable to the operations and transportation group manager. That group manager is accountable to the division's operations manager for all parts distribution centers. From a value chain perspective, the PDM is integrated within the primary activity of distribution operations. The PDM's organizational accountability emphasizes packaging designs for the efficient and damage-free handling of service parts throughout the distribution network.

Organizational Responsibilities

Although the PDM is organizationally integrated within distribution operations, the PDM's organizational responsibilities extend beyond the primary activity that it is accountable to. The PDM is responsible to the purchasing function, which is a supporting organizational activity, for the design of cost-effective packaging. Evidence of this includes the organizational requirement for the cost analysis of any packaging design change that could impact product cost. Further emphasizing the PDM's responsibilities to the purchasing function, these cost analyses require approval by the purchasing function.

The PDM's responsibilities include other organizational functions and external entities. Internal to the organization, the PDM is responsible to the inbound logistics function, which is a primary organizational activity, for packaging designs that optimize space utilization. External to the organization, the PDM's responsibilities extend to include automobile dealerships' parts departments by ensuring service parts remain damage free until the point of sale and installation.

These diverse packaging responsibilities sometimes conflict. Regarding diverse organizational packaging requirements, the PDM described the potential for conflict as, "Yes, absolutely." This requires the PDM to balance organizational responsibilities that sometimes compete in order to produce the most optimal packaging design possible.

Organizational Reporting Level

The PDM's organizational reporting level is non-management. The PDM directly reports to the first-level manager of the operations and transportation group. Although non-management, the PDM is organizationally empowered to autonomously ensure that packaging decision-making is efficient and balances the organization's various needs. As the PDM describes this authority, "My boss empowers me to do my job to the best of my abilities." By empowering the PDM, the organization compensates for the PDM's lack of managerial authority that could potentially impede packaging decisions having cross-functional impact.

Organizational Structure

The PDM's structure is an individual specialist. Although the PDM is a single person, the PDM is organizationally empowered to make autonomous packaging decisions. As the PDM

self-describes it, “I am autonomously empowered.” Additional evidence of this structure-based empowerment pertains to the previously described cost analyses. Any packaging design change that could potentially impact the service part cost requires analysis and approval by the purchasing function. The PDM is empowered to not only perform these cost analyses, but also approve the packaging change on behalf of the purchasing function. The purchasing function’s empowering of the PDM to create EOP, despite incremental costs, is rooted in the PDM’s organizational structure; that being an individual specialist having demonstrated trustworthiness and the ability to balance the conflicting needs of the entire organization.

Organizational Frames

The PDM describes the work environment as having the characteristics of the structural, human resource, and political frames. The structural frame’s metaphor of a machine was identified by the PDM because, “We function like a machine with all parts doing there required tasks.” The human resource frame’s metaphor of a family and leadership image of empowerment was identified with by the PDM. This appears to be due to the PDM’s empowerment and relationships. In support of the human resource frame the PDM said, “My boss allows me to do my job and supports me.”

The PDM identified with negative characteristics of the political frame. This was coincidental with packaging decision-making incidents where it was difficult to reach a balanced packaging design due to conflicting organizational interests. An example of this includes the packaging of automobile hoods. Some hoods are produced, packaged, and shipped directly from the overseas parent corporation into the US service parts distribution network. The PDM discovered that the packaging did not adequately protect those hoods based on damage claims

data from domestic consumers. The PDM designed and tested alternative packaging that provided the necessary product protection. The PDM then prepared a business case supporting the change to the offshore supplier's hood packaging. It stated that the added expense to improve the packaging would significantly reduce domestic damage claims costs. With the parent corporation's support, the offshore hood supplier declined to make packaging improvements. The supplier argued that the packaging was successfully used on a global basis and only US consumers reported damage. The PDM argued that US distribution network and handling methods were different and that packaging only needed to be changed for US-bound hoods. The offshore supplier rejected the PDM's proposal for destination-differentiated hood packaging again with the parent corporation's concurrence. As a result, imported hood packaging remains dysfunctional. US consumers continue to experience higher than necessary damage rates for imported hoods due to the parent corporation's decision. Because of these types of organization-based conflicts, the PDM relates to the political frame metaphor of a jungle where packaging decisions are based on power.

The example reveals an underlying organizational tension between the offshore parent company and the domestic service parts division. The service parts PDM is empowered to pursue EOP decisions; but, the research reveals that the offshore parent organization has the ultimate packaging decision-making authority for offshore sourced parts. Both the PDM and the PDM's supervisor suggest that packaging decision-making needs to be insulated from corporate politics in order for true empowerment and the subsequent creation of EOP.

While local organizational behavior insulates the PDM from corporate politics for the most part, it has not fully protected the corporation from packaging related risks. In the

example of dysfunctional hood packaging, the service division's risk includes the tangible costs of damage claims and subsequent inventory replacements costs. Less tangible risks to the entire corporation include damaged brand reputation and customer dissatisfaction that can erode consumer loyalty and negatively impact automobile sales.

Organizational Change

Organizational change has dramatically influenced the service parts PDMs by repeated manipulations of organizational accountability, responsibilities, and structure over time. The history of different organizational behavior with respect to service parts PDMs spans approximately twenty years. These changes directly correlate with the corporation's changing business conditions and strategies. This demonstrates how dynamic business conditions precipitate new corporate strategic needs that in turn modify specific organizational behaviors and ultimately influence PDMs and packaging designs.

The corporation's early history shaped when and how the first service parts PDM was established. In the 1980s, the corporation had established its presence in the US market by importing vehicles. Late in that decade, the corporation partnered with a domestic manufacturer for the production of vehicles. It was at this point that the corporation's service division established a PDM. The PDM's organizational structure was a single specialist who was accountable to the warehousing and distribution operations manager. Soon the service division organizationally expanded coincidental with the corporation's increasing market share. In the late 1990s, a service parts packaging operation was established within a new parts distribution center. Simultaneously, the organizational structure of packaging decision-making evolved to a

packaging engineering department comprised of three packaging specialists. The organizational change was made in response to the growing workload of packaging decision-making.

Shortly after 2000, the service division contracted with a third-party service provider to perform all warehousing and distribution functions. This included the division's packaging operations as well as all service parts packaging decision-making. This eliminated the organization's PDMs because the third-party service provider was making all packaging decisions independently. As described by a current service division manager, the organization and its consumers no longer "had a voice" in packaging decisions. Over time the contractual agreement with the third-party service provider was radically reduced for various business reasons. One of the reasons related to packaging was that packaging material and labor costs were not visible to the organization. The third-party contract allowed packaging costs to be charged on a cost-plus basis. This meant that packaging material costs were marked up by a contractual percentage that conceptually covered the service provider's labor, overhead, and profit margin.

While this contractual arrangement relieved the organization of many administrative costs including PDM personnel, it deemphasized the need for cost effective packaging designs that balanced the organization's various packaging needs. Not only were packaging-related costs hidden, but packaging designs were suboptimal because they did not meet the organization's need for cost-effectiveness.

The outsourced packaging decision-making incurred avoidable costs and it harmed the organization's brand image. Dysfunctional packaging designs were created that poorly protected products and negatively impacted customer satisfaction. Five years ago when the

third-party service provider's contract was restructured, the corporation's customer satisfaction rating for service parts was "worst in class" based on annual surveys of US automobile dealerships' service parts managers. Many US dealerships have multiple automobile brands and give parts managers the ability to directly compare brand performance of service parts packaging.

Concurrent with the modification of the third-party service provider's contract, the organization re-established a packaging specialist position and came full circle with respect to the PDM's organizational structure. Since then, the service parts PDM has made significant progress in improving packaging performance through better packaging designs. This is evident by improved customer satisfaction ratings that currently place the corporation at the industry's average. Additionally, the PDM's designs are better for the enterprise as cost analyses include actual packaging costs that are controlled by the service division.

While this description of the PDM's history focused on organizational structure, it also describes changes to the PDMs' accountability and responsibilities. Coincidental with the corporation's use of the third-party service provider, the PDM department was dissolved and the third-party service provider assumed packaging decision-making. The organizational accountability for packaging decision-making moved from the warehousing and distribution operations manager and became external to the organization. Simultaneously, the organizational responsibilities for packaging decision-making moved externally became focused on the third-party provider's packaging needs. This lack of internal control and influence on packaging decisions appears to have contributed to suboptimal and dysfunctional packaging designs during that period.

Once the third-party service provider's contract was modified, organizational accountability and responsibilities for packaging decision-making returned internally to the organization and the recreated PDM specialist position. Packaging designs that are better for the organization have resulted from the most recent changes to the PDM's organizational accountability, responsibilities, and structure.

Validation of Theoretical Relationships

Organizational behavior has influenced the packaging of service parts in several ways. This section addresses the previously presented evidence supporting the research propositions. Additional supporting evidence is presented including any evidence that does not support the propositions.

P_1: There is evidence supporting the proposition that the PDM's organizational accountability influences the packaging decisions. The evidence includes the effects on packaging designs due to the organization having eliminated and then re-establishing its PDMs. When the PDM's department was eliminated and packaging decisions were outsourced, packaging designs were suboptimal and not cost-effective. At that time packaging designs were also dysfunctional and service parts damage issues ensued. Later when the organization re-established the PDM, EOP designs were enabled to better fulfill the organization's packaging expectations including improved customer satisfaction.

Beyond the history of having been eliminated and then re-established, the PDM's organizational accountability did not change over time. Additional evidence supporting or contradicting the proposition was not found.

P_2: There is evidence supporting the proposition that the PDM's organizational responsibilities influence packaging decisions. The evidence again includes the effects on packaging due to the organization having eliminated and then re-established its PDMs. The organization's diverse packaging responsibilities were significantly reduced due to the elimination of the PDM's department. For example, external consumers' need for protective packaging became a persistent issue. Cost-effective packaging also became an issue for the organization. Later when the organization re-established the PDM, packaging responsibilities for purchasing and external consumers was re-established through packaging decisions that were cost-effective and protected parts. No evidence was found that contradicted the proposition.

P_3: There is evidence supporting the proposition that the PDM's organizational reporting level influences packaging decisions. This evidence includes how packaging decisions are currently made due to the PDM being a direct report to the organization's manager of the operations and transportation group. This manager made the business case to hire an experienced packaging specialist and empowered the new PDM to resolve the organization's suboptimal packaging problems. This included restoring the "voice" of external consumers and cost-effective packaging for the purchasing function. No evidence was found to directly contradict the proposition.

P_4: There is evidence supporting the proposition that the PDM's organizational structure influences packaging decisions. This is evident by packaging decisions made during the PDMs' different organizational configurations over time. The original individual packaging specialist

was adequate until the organization expanded and workload significantly increased. When the organization established an in-house packaging operation, a packaging engineering team was established enabling the PDM to keep pace with the amount of packaging tasks. When the organization outsourced much of its operations including the packaging operation, the PDM team was eliminated. Then when suboptimal and dysfunctional packaging became chronic, the organization re-established the PDM as an individual packaging specialist. Each of the different PDM structures influenced packaging decisions. Not all were positive and no evidence was found to directly contradict the proposition.

P_5: There is evidence supporting the proposition that organizational frames influence PDMs. This evidence includes the positive influences that were indicated from the structural and human resource frames. The current PDM describes the organization's working environment as being like an "empowered machine" due to the PDM's autonomy and empowerment. Evidence includes the negative influences of the politically-framed organization. This was coincidental with politicized packaging decisions that were effectively made at higher levels in the organization by the overseas parent company. Historical evidence of PDMs' frames is very limited. No evidence was found that contradicted the proposition.

P_6: There is strong evidence supporting the proposition that organizational changes influence PDMs. Evidence of this are the significant historical changes to the PDM's including its evolved organizational structure such as the organization having established, expanded, eliminated, and re-established its PDM function. Some structural changes had the intended positive results for the organization while others had unintended consequences. For example,

the expansion from a single specialist to a team of specialists enabled the PDM to make packaging decisions coincidental with the growing workload. The elimination of the PDM coincidental with the third-party services contract had unintended negative consequences for the corporation that directly related to packaging. After the organization modified its contract with the third-party services provider, it re-established the PDM specialist position in order to eliminate dysfunctional packaging and reduce suboptimal packaging. Both the positive and negative influences due to organizational changes support the proposition. No evidence was found that contradicted the proposition.

The influences of organizational behavior on the service parts PDM and packaging decisions are clear. Their relationship to the different types of packaging designs and subsequent corporate risks are further explored in the next section.

Automobile Manufacturer Intra-Case Comparisons and Contrasts

Comparing and contrasting the influences of organizational behavior between the embedded cases provides additional insight to the propositions including the theoretical relationships to packaging designs and corporate risks. This section begins by comparing and contrasting the assembly components and service parts PDMs with respect to each of the researched organizational behavior variables. A summary of the historical and current organizational behaviors for all PDMs is then presented. The intra-case comparison includes a summarizing table for the PDMs with respect to the research propositions covering current and historical states. The intra-case comparison section concludes by discussing the corporate risks that resulted from, or were avoided by, packaging designs for the automobile manufacturer.

P_1: Regarding organizational accountability, both PDMs are currently accountable to primary activities for their organizations. This has not impeded their ability to make packaging decisions on behalf of the entire organization.[8] Although the influences of organizational accountability on packaging decisions have been historically demonstrated in the corporation, other factors seem to enable the PDMs to make EOP decisions while being accountable to primary activities. For the assembly components PDM who operates in a cross-functional team of peers, organizational responsibilities, reporting level, and structure appear to have greater influence in making EOP decisions than organizational accountability by itself. For the service parts PDM who acts as an empowered individual, the previous changes to other organizational

[8] The recent change to the assembly components PDM's organizational accountability introduced the potential for material handling needs to be prioritized over other function's needs. Design bias has not yet been demonstrated. The PDM's participation in the organization's cross-functional design team may be successfully mitigating such risk.

behaviors seem to reinforce the PDM's authority to make EOP decisions. For example the series of changes to the PDMs' organizational structure, coupled with the significant risks incurred by the corporation while packaging decision-making authority was outsourced, appear to have greater influence on the pursuit of EOP than organizational accountability by itself.

Historical evidence for the assembly components PDM indicates that the organization deliberately changed the PDM's organizational accountability, from the purchasing function to the new product launch group to better align itself with its manufacturing partner, without impeding the PDM's ability to create cost-effective packaging designs. The potential risk for creating suboptimal designs by deemphasizing packaging costs appears to have been mitigated by the PDM's participation in the cross-functional team. This indicates that changes to organizational accountability for non-packaging strategies can be made without introducing risks by simultaneously manipulating other organizational behaviors such as the PDM's responsibilities. The continued creation of cost-effective packaging while satisfying more organizational entities successfully avoided packaging-related corporate risks.

Historical evidence for the service parts PDM indicates that the organization deliberately changed the PDM's organizational accountability, from the internal operations and transportation group to the external third-party service provider. This was part of a strategic decision to reduce overall costs to the organization. But this resulted in both suboptimal and dysfunctional packaging designs. These types of packaging designs introduced risk to the corporation in the form of diminished brand reputation and consumer loyalty. More tangibly the risks caused the organization to incur avoidable costs that reduced profits.

The historical evidence of the two embedded case PDMs distinctively contrasts how organizational accountabilities relate to packaging-based risks. While the assembly organization appears to have proactively error-proofed the change to its PDM, the service organization was either unaware of, or unable to, mitigate packaging risks when it outsourced packaging decision-making. For the former, corporate risks were avoided while for latter, significant risks came to fruition. Despite the significant historical differences between the two organizations' accountability for their PDMs, other organizational behaviors appear to have greater influences on the creation of EOP.

In summary, the organizational accountability of two organization's PDMs evolved in two distinctly different paths. The assembly components PDM has been organizationally enabled to consistently design EOP while the service parts PDM was outsourced for a period of time. The service organization did not mitigate potential packaging-related risks in advance and ultimately recreated an internal PDM. Both PDMs are now pursuing EOP for their respective organizations and reducing packaging-related corporate risks.

P_2: Regarding organizational responsibilities, both PDMs are currently responsible for the packaging needs of multiple primary and supporting activities as well as external entities such as suppliers or dealerships. This broad range of organizational decision-making responsibilities enables both PDMs to pursue EOP and not emphasize any one particular organizational activity's packaging needs. The influences of organizational responsibilities on packaging decisions are readily demonstrated by both PDMs' histories. The organizational responsibilities of the assembly components PDM were strategically changed over time to consider the functional packaging needs of union ergonomics, corporate safety, industrial

engineering, end users on the assembly line, quality, and material handling in addition to the PDM's original responsibility to the purchasing function. The packaging designs that resulted have minimized corporate risks. For example, the addition of union ergonomics and corporate safety responsibilities placed worker safety on "equal footing" with other packaging decision-making criteria such as cost.

Similarly, the organizational responsibilities of the service parts PDM were deliberately changed over time as the result of the organization's changing out-sourcing and cost-reduction strategies. When the organization contracted with a third-party service provider it effectively eliminated direct control over packaging decision criteria. This was not a strategic change in packaging decision-making as the organization was not attempted to deliberately manipulate packaging decision-making responsibilities. Instead, changed packaging responsibilities resulted from the organization's strategy to reduce organizational costs through a third-party service provider. The organization failed to mitigate potential packaging-related risks in advance of the change. The ensuing suboptimal and dysfunctional packaging designs compromised the corporation's brand reputation, diminished customer loyalty, incurred avoidable costs, and reduced profits. Only after the third-party contract had expired was the organization able to re-establish its PDM with strategic organizational responsibilities. For example, the current PDM's decision criteria now include the "voice" of external consumers. Evidence of how this new responsibility has influenced packaging decisions includes the dramatic improvements in customer (dealerships) satisfaction survey scores. This further demonstrates how the current PDM's EOP designs are now avoiding various corporate risks.

Although both organizations deliberately changed their PDM's organizational responsibilities, the two differed regarding their intentions. The assembly organization strategically manipulated its PDM's responsibilities to create better packaging. The service organization only manipulated its PDM's responsibilities toward EOP after it had inadvertently lost control over packaging decision-making and suffered costly consequences.

In summary, the organizational responsibilities of the two PDMs evolved in distinctly different paths. Expansions of the assembly components PDM's organizational responsibilities were gradual, uneventful, and productive. Changes to the service parts PDM's organizational responsibilities were dramatic and were not always beneficial to the organization or corporation. Both PDM are now producing better packaging for their respective organizations and minimizing packaging-related corporate risks.

P_3: Regarding organizational reporting levels, both embedded cases demonstrate that PDMs do not require management reporting levels to be effective or avoid undue organizational influences. Both PDMs are non-management role employees who report to mid-managers of primary activities in their organization. Both PDMs are pursuing EOP designs that are at least partially enabled by their reporting levels. This is clearly demonstrated by the assembly components PDM who participates in a cross-functional team of non-managers. This enables the team to collaborate on packaging designs due to the team members' equal organizational stature. The service parts PDM has been empowered by the organization's management to autonomously pursue EOP for the entire organization despite not having a manager's title.

The histories of the PDMs' reporting level contrast sharply. While the assembly components PDM's reporting level has remained unchanged over time, the service parts PDM's reporting level changed coincidentally with the organization's outsourcing initiative. The resulting packaging designs created by the third-party service provider were suboptimal and dysfunctional. As previously described, this created risks for the organization and the corporation. Some risks were realized and had tangible financial consequences such as damage claims while others had less tangible consequences such as damaged brand reputation. This experience led the organization to recreate its PDM as an empowered non-management role individual employee. This organizational correction is producing the desired results in the form of EOP.

P_4: Regarding PDM's organizational structure, both PDMs are currently individual specialists. The service parts PDM is autonomously empowered while the assembly components PDM participates in a cross-functional team. In both cases the structure of an individual packaging specialist is satisfying the organization's current packaging needs and creating EOP designs.

The historical influences organizational structures have had on packaging decisions are evident in both organizations. For the service organization, the PDMs' evolving historical structures reflected the organization's evolution and its changing strategic packaging needs. The original PDM specialist position organizationally evolved into a small team as the corporation grew its domestic business and the packaging decision-making workload increased. This maintained the quality of packaging designs despite the incremental volume of required packaging decisions. Later, the organization dissolved the PDM team as part of it strategic

outsourcing initiative that included much of the service organization's primary and supporting activities. This led to the previously described suboptimal and dysfunction packaging designs that created corporate risks. The organizational structure of the current PDM, an individual packaging specialist, has brought the organization full circle with respect to PDM structure. The adjustment was strategically done to create EOP designs and reduce corporate risks.

For the assembly organization, the historical structure of its PDMs, individual packaging specialist, has remained static over time. The only exceptions were the periodic expansions within the PDM's cross-functional team. Those changes were strategically made to produce better packaging designs according to the organization's evolving definition of enterprise optimal packaging.

Despite the historical contrasts of the embedded cases and their PDMs' structures, the current configuration of individual specialists appears to be satisfactory for both organizations. The influences of the PDMs' organizational structures have been demonstrated by examples of optimal, suboptimal, and dysfunctional packaging designs and the associated risks and benefits to the organizations and corporation.

P_5: Regarding organizational frames, both PDMs currently fit the structural and human resource frames. Their work environments reflect methodical decision-making processes that emphasize personal relationships. These frames positively influence the PDMs to pursue EOP designs that minimize organizational risks.

Occasionally both PDMs have indications of politically framed organizations particularly when decision-making becomes conflicted or problematic. This was exemplified when the assembly components PDM was unable to obtain team approval for door assembly packaging.

The team's environment took on the political frame's characteristic of a jungle where power became the basis for decision-making and not the team's typical collaborative environment. Delays in finalizing the packaging designs introduced corporate risks and some avoidable expenses were incurred. While such decision-making conflicts are rare, this was not an isolated incident. Other packaged component examples included hood appliqués and interior headliners that resulted in suboptimal and dysfunctional packaging types. This suggests that the team that is typically framed in terms of structural and human resource characteristics but it is occasionally prone to the negative influences of a politically framed organization. This dynamic appears to be rooted in the team members' reporting levels consisting of non-management peers. While the team is predisposed to collaborative decision-making, conflict is always a potential among peers having equal corporate stature.

The service parts PDM occasionally experiences the negative influences of a politically framed organization. This was exemplified by dysfunctional hood packaging that was designed and applied by offshore suppliers. Here again the political frame's characteristic if a jungle negatively impacted the PDM and the ability to redesign an enterprise optimal packaging solution. Moreover, this incident was not unique and negative influences of the politically framed organization appear more commonly with offshore parts suppliers than domestic ones. For the PDM, this creates feeling of resentment towards the parent corporation that selects offshore suppliers and the supplied packaging. The PDM's management is aware of the potentially negative working environment and attempts to minimize the negative impact of corporate politics on the PDM. As the PDM describes it, "[when] political issues arise, my boss insulates me from that." This not only demonstrates the negatives influences and corporate

risks associated with a politically framed organization, it shows how the service organization's management attempts to mitigate these risks for its typically empowered PDM.

Historically, both PDMs' organizational frames appear to have been static over time and the only exception occurred when the service parts PDMs were eliminated. While direct evidence could not be obtained, the working environment of PDMs who transitioned their duties to an external resource seems to fit with a political organizational frame rather than a human resource frame that values its personnel. What is clear is that the organization created a structural and human resource framework when it re-established the service parts PDM.

Both embedded case organizational frames are currently influencing PDMs in a positive way. The resulting packaging designs are optimal per their organizations' definitions and are minimizing corporate risks.

P_6: Both organizations deliberately made changes to their PDMs in order to support emerging corporate strategies that manipulated all of the researched behavioral variables. For assembly operations, strategies emerged to create packaging designs that would be more responsive to additional organizational needs such improving worker safety and ergonomics. This indicates that the organization's definition of optimal packaging strategically evolved over time. For the service parts organization, a strategy emerged to outsource organizational functions to reduce costs. This caused the organization to lose direct control of packaging decision-making and significant risks to the organization ensued. Eventually a new strategy emerged to re-establish a service parts PDM and pursue EOP. Both organizations recognized the strategic value of packaging with respect to their evolving strategies and made deliberate organizational changes to their PDMs.

Deliberate changes to structure-based organizational behaviors, such as PDMs' accountability and responsibilities, were very obvious. Accountability changes were recently made for the assembly components PDM, from the new product launch group to material handling. Any changes to how this influences packaging decision-making or what types of packages are designed as a result of this organizational change to are not yet evident. Accountability changes for the service parts PDM, from an internal authority to an external one and back again, significantly influenced the focus of packaging decisions and the types of service parts packaging. Changes were deliberately made that broadened both PDMs' organizational responsibility over time and better enabled them to create optimal packaging for their organizations.

The influences of organizational behaviors that are both structure and relationship-based, such as PDMs' reporting levels and organizational structures, were visible in both embedded cases. While the assembly components PDMs' reporting level remained unchanged over time, the structure of the PDM's cross-functional team expanded several times. Each expansion coincided with the strategic addition of organizational responsibilities. For service parts, the PDM's reporting level and organizational structure were changed coincidental with the organization adopting and then abandoning its outsourcing strategy. This significantly influenced packaging decision-making both negatively and positively as evident by the types or packaging that resulted. Both organizations now benefit from their PDMs' organizational reporting levels and structures that have better enabled EOP designs and have reduced corporate risks.

Changes to the relationship-based behavior of organizational frames appear to be minimal for the automobile manufacturer's embedded cases. The obvious exception to this occurred when the service parts PDM was eliminated and later reinstated. Both organizations' PDMs identify with the structure and human resource frames. Both PDMs describe the on-going potential for the negative influences of politically framed organizations on decision-making. It appears that management of both organizations understand this and attempted to minimize the frequency and impact of negative influences. For these reasons, framing provides insight to the organizations' behavior but the deliberate manipulation of the PDMs' organizational frames seems nominal. Regardless of the degree that organizational frames were deliberately manipulated, both organizations have PDMs that use their relationships to pursue EOP and mitigate corporate risks.

Despite their similarities, the two organizations contrast significantly with respect to behaviors towards their PDMs. The most significant difference between the two organizations surrounds the service division's historical outsourcing strategy. The failure of the organization to proactively mitigate the packaging-related risks that ensued has several possible explanations. First, the organization may simply not have understood the potential packaging risks related to the change. Eliminating the cost associated with a staff of PDM specialist may have been financially appealing to the organization and the tangible savings potential may have overshadowed any consideration of packaging-related risks. The second possibility was that organization leaders assumed any packaging-related risks associated with the change would be nominal and managed by the third party. History proved that if this was intentionally assumed, it was incorrect. The third possible explanation was that the risks were both not fully

understood and underestimated by organizational leaders. The leaders who chose the outsourcing strategy could not be located and no evidence was found to support any of these possible explanations. Regardless of the organization's rationalization to outsource packaging decision-making, this incident provides insight to potential packaging-related risks for organizations considering outsourcing strategies.

The following table summarizes the organizational behaviors that influence the automobile manufacturer's assembly components and service parts PDMs (Table 8). Historical organizational behaviors that influenced the PDMs are included.

Table 8. Comparison of the Automobile Manufacturer's PDMs: Assembly Components and Service Parts

PDMs	Accountability (P1)	Responsibilities (P2)	Reporting Level (P3)	Structure (P4)	Frames (P5)	Change (P6)
Assembly Components Current	Material Handling (Assembly Operations; Primary Activity)	Inbound Logistics, Assembly Operations including End Users, Corporate Safety, Union Safety, Industrial Engineering, Quality, Purchasing, Suppliers	Non-Management	Individual in a large cross-functional team	Structural, Human Resource, Political (negative)	P1; Added non-packaging tasks to the PDM
Assembly Components Historical (Initial)	Purchasing (Supporting Activity)	Purchasing	"	Individual	unknown	not applicable
Assembly Components Historical (1^{st} change)	Product Launch Group (Assembly Operations; Primary Activity)	Inbound Logistics, Assembly Operations, Quality, Purchasing, Suppliers	"	Individual in a cross-functional team	Structural, Human Resource, Political (negative)	P1, P2, and P4; Altered to reflect corporate partner's organizational behaviors
Assembly Components Historical (2^{nd} change)	"	Functions above + Operational End Users and Corporate Safety	"	Individual in an expanded cross-functional team	"	P2 and P4 were repeatedly expanded to pursue better packaging
Assembly Components Historical (3^{rd} change)	"	Functions above + Union Safety and Industrial Engineering	"	"	"	"

Table 8 (cont'd)

PDMs	Accountability (P1)	Responsibilities (P2)	Reporting Level (P3)	Structure (P4)	Frames (P5)	Change (P6)
Service Parts Current	Distribution Operations (Primary Activity)	Inbound Logistics, Distribution Operations, Purchasing, Dealerships	Non-Management	Individual	Structural, Human Resource; Political (negative)	Evolving business needs re-established the PDM and altered P2, P4, and P5.
Service Parts Historical (Initial)	"	Distribution Operations	"	"	unknown	not applicable
Service Parts Historical (1^{st} change)	"	Distribution Operations, Packaging Operations	"	Team of 3 individuals	"	P2 & P4 were altered due to evolving business needs.
Service Parts Historical (2^{nd} change)	External to organization	External third-party service provider	not applicable	not applicable	not applicable	P1 – P4; Outsourcing initiative eliminated the internal PDM.

The lack of a finished goods PDM for the automobile manufacturer is curious. Arguably, the nature of the company's finished goods does not require extensive packaging. This does not preclude the existence of packaging-related opportunities or corporate risks. One PDM suggested that if packaging-related damage were discovered on finished automobiles, the overseas parent company would be notified and the necessity of a packaging solution would be remotely pursued. But given the example of dysfunctional service hoods packaging, remote assessments of packaging designs carries risks for the local organization and the corporation. No evidence was found to indicate that the automobile manufacturer is planning for a finished goods PDM.

The inability to find a domestic PDM for finished goods highlights an underlying organizational tension. The overseas parent organization and its domestic division are not fully connected at least with respect to packaging decision-making. This organizational tension was highlighted in the service parts example of imported dysfunctional hood packaging. In that example, the overseas parent corporation appears to remotely have final authority over domestic packaging decisions. While having absolute autonomous authority does not appear to be a prerequisite for making EOP decisions, the potential for a remote authority to veto decisions introduces packaging-related risks. The lack of organizational connectivity may be related to geographical proximity but corporate risks were clearly demonstrated in the service parts embedded case. The lack of a finished goods PDM suggests the company is either unaware of risks and opportunities for finished goods packaging or underestimates the potential impact of such risks. Regardless of the corporation's logic, it appears that

organizational leaders have made assumptions about the value of packaging for finished automobiles.

Case 3: Appliance Manufacturer

This Fortune 500 manufacturer produces major appliances for cooking such as freestanding ranges, built-in stove tops, slide-in ovens, and “portable” microwave ovens. Another category of products includes refrigeration appliances that range from ten cubic foot “portable” refrigerators to those having 48” widths. The corporation manufactures fabric care appliances such as clothes washers and dryers that have various configurations such as top or front-loading units. Another product family is dishwashers that range in size and configurations, as well as other portable appliances. The manufacturer typically has “literally tens of new model introductions every year”. These durable goods may require service parts to keep them operating before and after warrantee periods expire.

Although the corporation is headquartered in the US, it segments its global markets into four sales regions. These regions are: (1) North America; (2) Europe, Middle East, and Africa; (3) Latin America; and (4) China and India. Appliances are sold to end consumers as well as “trade partners” such as catalogue retailers, department stores, and home improvement chains.

The following sections summarize each embedded sub-case with respect to the research propositions, supporting evidence, and validation of the theoretical relationships. The sub-case sections are then followed by an intra-case comparison focused on the proposed theoretical relationships including how packaging designs contributed to or reduced corporate risks. The intra-case comparison includes a summarizing table for the PDMs with respect to the research propositions covering current and historical states.

Embedded Case: Appliance Assembly Components

Manufacturing is the primary activity of the corporation so assembly components are procured, packaged, and shipped to manufacturing locations for the assembly of appliances. Assembly components packaging often uses a fleet of returnable containers. Standardizing the container fleet has brought uniformity in packaging decision-making to the organization. This in turn has reduced avoidable expenses such as the use of interim disposable packaging. The following sections describe the influences that specific organizational behaviors currently have on assembly component packaging decisions. A section that describes how organizational change has influenced the PDMs follows these.

Organizational Accountability

The PDM for assembly components is accountable to the organization's integrated supply team. From a value chain modeling perspective, the assembly components PDM is integrated in the supply function that is a supporting activity for the organization's primary activities of inbound logistics and manufacturing. The integrated supply team supports the design of packaging including the management of the returnable containers in the US. The primary role of the supply function is to, "Manage all inbound transportation to US locations and container management strategy of components and supplies." This is accomplished by balancing the organization's diverse supply chain needs including inbound logistics, manufacturing, and purchasing.

The packaging of assembly components is a key enabler for the supply function to fulfill its responsibilities. The integrated PDM supports the supply team's organizational obligations by balancing various organizational needs through EOP designs. This is the organization's

strategic rationale for the PDM being integrated in the supply function. This demonstrates the strategic influence that organizational accountability has on packaging decision-making.

Organizational Responsibilities

The PDM's organizational responsibilities include primary activities, such as the inbound logistics and manufacturing functions, and supporting activities such as procurement. Because the organization's packaging requirements are diverse and can readily conflict with one another, the PDM created a packaging "decision criteria tree." The PDM uses the decision criteria tree to resolve conflicting organizational needs of new assembly components at manufacturing sites. This enables the creation of EOP.

The packaging decision criteria do not provide equal balance to all of the organization's diverse packaging requirements and instead prioritize the material flow requirements of the organization's manufacturing operations, followed by its logistical requirements, and lastly the procurement function's need for minimal packaging costs. The packaging decision criteria tree not only enables EOP decisions, it additionally creates uniformity throughout the organization by standardizing the packaging decision-making process for all manufacturing sites.

The PDM-established decision criteria tree demonstrates how organizational responsibilities packaging decisions and designs.

Organizational Reporting Level

The PDM's organizational reporting level is described as "management." The PDM reports to the organization's senior director for integrated supply team. This director is a regional vice president in the organization. This organizational reporting level affirms the PDM's

strategic value to the integrated supply team and the organization. The PDM's management reporting level is obvious and reinforces its organizational stature as a supporting activity having packaging decision-making authority. This further empowers the PDM to make packaging decisions on behalf of the entire organization.

The PDM's reporting level influences packaging decisions and is evident by the packaging-related standards created by the empowered PDM. These standards include the previously described packaging decision criteria tree. Standardizing decision criteria was a necessary step toward standardizing the packaging decision-making process for all manufacturing locations. The PDM is empowered to make decisions on behalf of all manufacturing is a function of its organizational accountability and reporting level in combination. For the assembly components PDM, these two variables coincidentally and positively influence packaging decisions.

Organizational Structure

The PDM's organizational structure is a central team comprised of individual PDMs who are "responsible for systems, procedures, and standards" with respect to assembly parts packaging and the returnable container fleet. The PDM's organizational structure includes individuals located in each manufacturing site's materials department. These remotely located PDM individuals are responsible for the local application of packaging designs and standards.

The PDM's organizational structure influences packaging decisions in several ways including the use of the central team's standardized packaging decision criteria tree. The central team additionally standardized the packaging decision-making process including how conflicting packaging requirements are resolved. The central PDM team also administers the

remote PDMs to ensure the uniform application of packaging standards throughout all manufacturing sites. The PDM's organizational structure directly enables EOP for assembly components.

Organizational Frames

Framing perspectives provide particular insight to relationship-based organizational influences on the PDM and ultimately packaging designs. Positive influences in the PDMs working environment are described by the human resource frame while negative influences are described by the political frame.

Regarding positive influences, the PDM manager identified with the human resource frame's organizational metaphor of a family and the leadership image of empowerment. This was due to the organization's "corporate culture" being most like a family. This reflects the human resource frame's central concept of an organization that is focused on employees' needs, skills, and relationships. Regarding packaging decisions, the corporate culture creates an overarching commitment to the organization's needs and creating EOP. The PDM self-described this as being "empowered to execute packaging."

Regarding negative influences, the political frame's metaphor of a jungle was identified with. This reflects the political frame's central concept of an organization that is focused on power, conflict, competition, and organizational politics. Regarding packaging decisions, the PDM's working environment has elements of conflict and organizational politics that must be overcome to create EOP. This organizational frame exists due to "local change management processes that are still in process." This refers to significant organizational changes that recently took place relatively to who is empowered to make packaging decisions. The authority shifted

from local manufacturing sites to an organizationally central authority. The political effects of these changes are still occasionally experienced at the local level and must be addressed by the PDM's central team. These changes are fully described in the following section.

Organizational Change

Organizational change has dramatically influenced packaging decision-making for the assembly components PDM. Three years ago organizational leaders pursued a strategy to standardize assembly parts packaging to reduce operating expenses such as logistics and manufacturing costs. This required the organization to change how packaging decision-making was administered and created a central packaging authority. This organizational change influenced the historical PDMs by simultaneously manipulating all of the research variables. The following describes the influences the organizational changes had with respect to each research variable.

Regarding PDM's organizational accountability, historically PDM's were located at each manufacturing location. These dispersed PDMs were typically accountable to the local plants' materials departments. These departments oversaw the handling of assembly components from receipt to assembled finished appliances including packaging. The dispersed PDMs were independent of each other. As such, PDMs were incapable of making packaging decisions on behalf of the entire organization and packaging decisions were based on each plant's local requirements. Although packaging designs may have been locally optimal, they were not optimized for the entire enterprise. Historical evidence of this included the routine use of expendable packaging. The new centralized PDM authority only permits the use of expendable packaging on an exception basis such as emergency component shipments. Regarding the

PDM's organizational responsibilities, the dispersed PDMs were primarily focused on their local plant's manufacturing needs. This included packaging that facilitated efficient handling and enabled manufacturing throughput. An informant described the packaging decision focus as, "Previously 100% manufacturing with an annual review." The PDMs' responsibilities to other organizational functions such as procurement and logistics were nominal because packaging was not being leveraged enterprise-wide. The new centralized PDM authority has responsibilities that include the entire organization's inbound logistics and procurement needs as well as manufacturing needs at both the local and enterprise-wide levels. Evidence of this is the new PDM's standard decision criteria tree. This guidance instrument provides balance to organization's often competing packaging requirements by giving them prioritization. Per the PDM manager, "The criteria leans more towards manufacturing, then logistics, then purchasing." The influence that organizational change has had on its PDMs is clear in the way that organizational responsibilities have been "formalized."

Regarding organizational reporting levels, historically the dispersed PDMs were non-management and reported to each plant's materials department manager. This organizational stature, combined with being dispersed, did not enable them to make EOP decisions, only locally optimal packaging designs at best. From an organizational perspective, these were suboptimal packaging types because they were not leveraged for or by the entire organization. The new centralized PDM's management role reporting level better enables EOP to be pursued. This is demonstrated by how the cost of returnable component racking is accounted for. Historically, the costing and ownership of assembly component racks varied from plant to plant. Typically individual assembly plants owned them and costs were based on projected

components volume. Depreciation-based accounting issues occasionally arose when projected volumes were not reached or whole programs were terminated. The new PDM has enabled the organization to shift the cost of returnable packaging through shared ownership with component suppliers. This directly supports the procurement function by reducing the organization's overall packaging costs. The PDM supports the inbound logistics function by standardizing component racking designs such as maximizing cube utilization and "footprints" of racks in trailers. The influence that organizational change has had on its PDMs is clear in the way that organizational reporting levels have been "elevated."

Regarding organizational structure, the historical PDMs were individuals embedded in the different assembly plant's materials departments. These PDMs were not affiliated with each other so suboptimal packaging designs were enabled with respect to the enterprise. For example, there was no formal method for the dispersed individual PDMs to share their packaging experience, knowledge, or best practices. The new centralized PDM's structure of a centralized team enables the department's PDM specialists to share packaging knowledge that better enables EOP decisions. The influence that organizational change has had on its PDMs is clear due to the move from dispersed individuals to a centralized team.

Regarding organizational frames, evidence regarding the historical PDM was very limited. What is known regarding organizational change and framing is that the change management is still ongoing at some local levels. This was evident be references to the political organizational frame such as the jungle metaphor. The influence that organizational change has had on its PDMs is clear as attributes of the human resource frame become more commonplace while negative aspects of the political frame are becoming less common.

Validation of Theoretical Relationships

Organizational behavior has influenced the packaging of assembly components in several ways. This section addresses the previously presented evidence supporting the research propositions. Additional supporting evidence is presented including any evidence that does not support the propositions.

P_1: There is evidence supporting the proposition that the PDM's organizational accountability influences packaging decisions. In order to fulfill the organization's strategic packaging needs, the PDM is now accountable to the integrated supply team, a supporting activity, to make packaging decisions that include the primary activities of inbound logistics and manufacturing as well as other supporting activities such as procurement.

The PDM's new organizational accountability has enabled packaging decisions to be centrally controlled and better for the entire organization. This is evident by new packaging decision criteria that formally added inbound logistics and procurement considerations. The historical lack of formal packaging decision criteria and the known historical bias towards manufacturing requirements support the proposition. No evidence was found that directly contradicts the proposition.

P_2: There is evidence supporting the proposition that the PDM's organizational responsibilities influence packaging decisions. This includes the previously described modifications that formalized the organization's packaging decision criteria. The new PDM formalized and expanded the criteria to better enable EOP decision-making throughout the organization. Similar to the previous proposition, the historical lack of formal packaging

decision criteria and the known historical bias towards manufacturing requirements support the proposition. No evidence was found that contradicted the proposition.

P_3: There is evidence supporting the proposition that the PDM's organizational reporting level influences packaging decisions. The new PDM is empowered to make packaging decisions for the entire organization due to its management roll status and being a direct report of a vice president. This enabled the PDM to apply its standard packaging decision tree to all of the organization's manufacturing facilities. Another way the PDM demonstrates its empowerment is by the organization's shift from locally applied expendable packaging to centrally designed returnable container and rack fleet. This benefits the organization by reducing material costs and enables logistical efficiencies while still supporting local manufacturing throughput. Other historical evidence supporting the proposition includes the inability of the dispersed non-management PDMs to collaborate and share knowledge with each other. This further benefits the entire organization buy reducing risks such as avoidable packaging-related costs and inefficiencies. No evidence was found to directly contradict the proposition.

P_4: There is evidence supporting the proposition that the PDM's organizational structure influences packaging decisions. The new PDM's is better enabled to make packaging decision on behalf of the entire organization due to its structure of a central team consisting of individual PDM specialists and a PDM manager as well as remotely located individual PDMs. The favorable influence is demonstrated by the team's resources that were able to design, and mandate the use of, the organization's returnable container fleet. Evidence includes the PDM

team having created the previously described packaging decision-making criteria and deploying it to all assembly plants.

Historical evidence supporting the proposition includes the dispersed individual PDMs' inability to make packaging decisions beyond their local manufacturing needs. No evidence was found to directly contradict the proposition.

P_5: There is evidence supporting the proposition that organizational frames influence PDMs both positively and negatively. This is evident from informant descriptions of the positive influences that the human resource frame has on the PDM's familial working environment. The proposition is supported by informant descriptions of negative influences from the occasionally politically framed organization. These included organizational resistance to the shift in packaging decision-making authority from local manufacturing facilities to an empowered central authority. The human resource frame is descriptive of the new PDM while the political frame is rooted in the previous PDMs' working environments.

Historical evidence of PDMs' organizational frames is very limited. This information gap does not directly contradict the proposition and no other evidence was found that contradicts the proposition.

P_6: There is evidence supporting the proposition that organizational changes influence PDMs. Evidence of this is how the PDM has been deliberately empowered through simultaneous changes to organizational behaviors such as accountability, responsibilities, structure, and reporting levels. These changes were strategically made by the organization in order to influence the PDM and strategically capture packaging-related opportunities. The

strategic organizational change from dispersed and independent PDMs to a centrally and empowered PDM authority was described by one informant as, “Senior leadership’s engagement recognized the disconnects and empowered a solution.”

Organizational frames confirm the influences that organizational change has had on PDMs. While it appears that the organization did not deliberately manipulate the PDM’s organizational frame, the organizational changes to the other research variables positively influenced the PDM’s working environment and further enabled the pursuit of EOP.

No evidence was found that contradicts the proposition.

The influences of organizational behavior on the assembly components PDM and packaging decisions are clear. Their relationship to the different types of packaging designs and subsequent corporate risks are further explored in the intra-case comparison section at the end of the case study.

Embedded Case: Appliance Finished Goods

The following sections describe the influences that specific organizational behaviors currently have on the packaging decisions for the appliance manufacturer's finished goods. A section that describes how organizational change has influenced the PDMs follows these.

Organizational Accountability

The PDM for finished goods is accountable to the organization's product development function. From a value chain modeling perspective, the PDM is integrated within the product development function that is a supporting activity for the organization. The product development function creates appliances that support the organization's primary activities of manufacturing and outbound logistics as well as the external needs of trade partners and consumers.

The packaging of finished goods is a key enabler for the product development function to fulfill its organizational responsibilities. Because the PDM is integrated in the product development function, it is able to design packaging coincidental with the design of new products. This ensures that packaging is compatible with manufacturing processes and outbound logistical requirements. The PDM's accountability to the product development function enables packaging that fulfills retailers' and consumers' packaging needs. This is the organization's strategic rationale for the finished goods PDM being integrated in the product development function. This demonstrates the strategic influence that organizational accountability has on packaging decisions.

Organizational Responsibilities

The PDM's organizational responsibilities coincide with those of the product development group including the organization's primary activities of manufacturing and outbound logistics. Additionally, the PDM is responsible to supporting activities that control the organization's costs and quality requirements. The influence of these diverse organizational responsibilities is demonstrated in the organization's quality function deployment (QFD) process.

The organization uses a quality function deployment process to translate "specific requirements to designs and technologies." This enables each new appliance to address the needs of various organizational functions during product development. The finished goods PDM uses the QFD process to fulfill its organizational responsibilities and make EOP decisions for each new appliance.

The finished goods PDM's organizational responsibilities extend beyond the organization to include trade partners' and retailers' packaging needs. This is demonstrated in QFDs for new products that consider trade partners' processing requirements. Such requirements are captured through "process walks" conducted at trade partners' facilities. As an informant describes it, "We actually walk that process from their regional distribution centers to maybe a store hub and to a particular store front and we look at how they handle the product all the way through their process to make sure we have an adequate design."

The finished goods PDM's organizational responsibilities externally include consumers. This not only targets packaging that delivers damage-free appliances but is also aesthetically pleasing. Packaging aesthetics directly influence consumers' purchases, choice of appliances,

and reflect brand loyalty. An informant described the importance of packaging aesthetics and consumers' perception this way, "We do get a lot of product back due to the way the package looks so the aesthetics of the pack plays a large role." The informant further described the importance of packaging aesthetics, "So the actual implication of not having a very robust pack, and that is even though it may not allow a great deal of damage, it could be perceived as a indicator of damage to the product." For these reasons the PDM's organizational responsibilities include external consumers' expectations of damage-free products in aesthetically pleasing packaging.

The PDM's various organizational responsibilities can sometimes conflict, "especially with respect to their primary function" such as cost and quality. In order to balance these conflicting packaging requirements, the PDM utilizes the QFD process to "make those tradeoffs in more of an analytical environment". The PDM's process organizationally empowers them to be responsible for packaging and "the total cost of quality including material costs and any other related quality costs". In this way, the PDM is empowered to balance all of organization's packaging requirements, external entities' packaging requirements, and pursue EOP.

Organizational Reporting Level

The PDM's organizational reporting level is described as "senior management." The PDM reports to the organization's vice president of Technology and Advanced Design. This organizational reporting level affirms the PDM's strategic value to the product development function. The PDM's reporting level is obvious within the organization and reinforces its organizational stature and prominence as a supporting activity that has packaging design

authority. This further empowers the PDM to make packaging decisions on behalf of the entire organization.

Organizational Structure

The PDM's organizational structure is a department comprised of a manager and several individual PDMs. Individual PDMs participate in different product design teams allowing the organization to simultaneously develop new model appliances and finished goods packaging. As the PDM manager describes the process, "We engage in packaging development very early on in the design process and make trade-offs with respect to the structure of the product verses the structure of packaging and we use a total cost criteria to make those packaging decisions." Furthermore regarding the individual PDMs' authority, "Essentially the packaging engineer has responsibility for cost and quality as well as the new technology introduction so they make that trade off so to meet both cost and quality targets." The PDM's departmental structure and the participation of its human resources in cross-functional product design teams demonstrate the influence that the PDM's organizational structure has on packaging decisions.

Organizational Frames

Framing perspectives provide particular insight to relationship-based organizational influences on the PDM and ultimately packaging designs. Several organizational frames were used to describe these influences.

For example, the PDM manager identified with both the human resource frame's organizational metaphor of a family and the leadership image of empowerment. The PDM's work environment was described as resembling "a family in that it is more of a team sport

because of the interaction with the different functions." This shows the interdependencies that the PDM and other organizational functions have while fulfilling their unique organizational responsibilities. The leadership image of empowerment was identified with because, "We have been able to demonstrate that we have a well designed development process that we use for packaging [and] that we can really optimize the performance of both our product and pack. So we have been able to quantify that in a number of ways and gain the confidence of our vice president that we in fact are doing the right thing for all of our different internal consumers as well as our external consumers." This further demonstrates how the organization's work environment influences the PDM and enables EOP to be designed.

The structural frame's metaphor of a machine was identified with because, "We have a well developed process that engages product design people very early on and optimizes the level of protection the external packaging gives the product, so we are able to quantify a lot of those parameters and make them part of the optimum decision, we do that very early on therefore it is more of a methodically repeatable process that we go through including early simulation of the packaging design to ensure the robustness of the product and pack." This demonstrates how the PDM's work environment enables optimum decision-making through a methodically repeatable process.

The symbolic frame's organizational metaphor of a temple and its leadership image of inspirational were identified with. "We really value as an ongoing strategy improving quality of both the product and the pack. And that is well understood throughout the corporation. So that is sort of our holy grail of deliverables and measurables for how successful we are." Regarding the PDM's immediate leader, "He is inspiring us to do things in a very quick lean way with first

pass success." This indicates how the PDM fulfills the organization's strategy of improving quality through packaging designs in part due to the working environment.

Organizational Change

Organizational change has dramatically influenced packaging decision-making for finished goods. The elimination of an external packaging engineering services provider simultaneously impacted the PDM's organizational accountability, responsibilities, reporting level, and structure. This in turn positively influenced the PDM's ability to create EOP.

Historically the organization had contracted for some external packaging engineering services. The service provider assigned its PDMs to each of the major product development groups. Within the last two years the accountability for packaging design development and verification was brought back "in house". This strategic change occurred because some packaging decisions made by the packaging engineering service provider were suboptimal. An informant suggested, "Some [packaging] decisions were not optimized to the total cost of quality when this outside engineering service was involved in the design process. The primary reason for that, the contract service probably did not have full line of sight in consideration of the total cost of quality versus the quality issues." Additionally, "That same resource was also contracted for testing and they really probably valued the poor design to a greater degree and that would experience more testing and that is where they really made their high margin."

The organizational change that brought packaging decision-making fully inside the organization changed the PDM's responsibilities, reporting level, and structure. The new PDMs responsibilities were now focused on the total cost of quality and not just satisfying an individual product design group's packaging needs. The new PDM's reporting level was elevated

and centralized from the external PDMs' reporting level to individual product development groups. The new PDM's structure was changed to be an internally central authority with place departmental representatives in each of the major product development teams. These changes not only optimized the packaging decision-making process it also better enabled EOP while reducing organizational risks from historically suboptimal packaging.

Historical information regarding the organizational frames is very limited due to the organization's use of external PDMs. Additionally it does not appear that organizational change intended to deliberately alter PDMs' frames. What is clear is that the new PDMs' working environment positively influences individuals and their pursuit of EOP.

Validation of Theoretical Relationships

Organizational behavior has influenced the packaging of finished goods in several ways. This section addresses the previously presented evidence supporting each research proposition. Additional supporting evidence is presented including any evidence that does not support the propositions.

P_1: There is evidence supporting the proposition that the PDM's organizational accountability influences packaging decisions. This evidence includes the previously described elimination of PDMs external to the organization. In order to fulfill the organization's strategic packaging needs, the PDM is now accountable to the product development function. There it operates as a supporting activity for the primary activities of manufacturing and outbound logistics, other supporting activities such as purchasing and quality, as well as other external entities such as trade partners, retailers, and consumers. The PDM's new organizational accountability has enabled packaging decision-making to be better aligned with the entire

organization's needs by changing the "frame of reference" to the "total cost of quality".

Supporting evidence includes the organization's use of high performance computing systems to design and simulate new appliance packaging. The organization treats new appliances and their packaging as an "integrated system that withstands shipping rigors and arrives undamaged." Access to, and use of, the organization's IT system reflects a positive influence on internal PDM's ability to pursue EOP.

Evidence in support of the proposition includes the PDM's "technological roadmaps." By being organizationally accountable to the vice president of technology and advanced development, the PDM is tasked with assessing the evolution of packaging materials used for finished goods. In order to do this, the PDM first classifies appliance packaging components as: bases, corners, enclosures, tops, cross-braces, and additional internal dunnage. The PDM then includes the packaging materials and styles used for each of these packaging components in the technology roadmap. The roadmap includes a timeline that illustrates how packaging materials and styles have historically been used to package appliances. The timeline continues into the future in bi-annual increments to assess the evolution of packaging materials and styles for all of the packaging components. Not only does the roadmap forecast packaging technology, it also sets milestones for the organization with respect to adaptation and implementation.

For example, packaging enclosures for appliances have predominantly been corrugated fiberboard sleeves that attach to bases and tops. The technology roadmap for enclosures illustrates a shift to more use of poly films to enclose packaging appliances. As the roadmap extends further out into the future, specific thicknesses are shown to illustrate better performance using thinner poly films.

The PDM's technology roadmap further demonstrates the PDM's organizational accountability to the product development group by including a section for products or "assemblies." This reiterates the PDM's integration with new product development by forecasting the recycling, returning, and reusing of finished goods components. Similarly, the technology roadmap forecasts the disposal, recycling, and reuse of packaging materials at the packaging component level.

The only evidence found that did not support the proposition was a historical change to the PDM's accountability that moved it from a "general engineering" activity to its current accountability. This occurred after the elimination of the external PDMs and was done to optimize the organization's product development procedure. It is unclear if and how this influenced packaging decisions. While this evidence does not directly support the proposition, it does not contradict it. No other evidence was found that contradicts the proposition.

P_2: There is evidence supporting the proposition that the PDM's organizational responsibilities influence packaging decisions. This includes the broadening of responsibilities to include all product development groups made possible by eliminating external PDMs. The organizational influences are demonstrated in other ways.

Additional evidence includes the PDM's North American Region (NAR) Product and Packaging Transit Test Procedure and Performance Standard. The new PDM created an engineering standard to document key elements of the packaging decision-making process including performance testing of packaged appliances. The standard includes the various packaging requirements of the organization and other external packaging expectations. The standard gives decision-makers the ability to balance conflicting packaging requirements and

better enables EOP to be designed. The seventy-page standard specifically includes several organizational responsibilities such as outbound logistics. Different product transportation and handling scenarios are described in detail along with the corresponding packaging testing procedures. Packaging evaluation criteria include detailed descriptions of product and packaging failures that might otherwise be subjective performance indicators.

For example, the standard provides visual inspection criteria for product testing that includes: dents, dings, creases, buckled and bowed panels; finish abrasion and scuffing; scratches; and surface imperfections and paint chips. The standard includes visual inspection criteria for tested packaging such as: carton bow (inward or outward); carton tears; carton creases; poly film tears; and corner dunnage damage. Each of these visual inspection criteria for tested product and packaging include pictorial examples for minor, moderate, and major failure modes. Every example includes numeric severity values (e.g., major damage has a severity index of 5 out of a possible score of 5). Not only does this provide uniformity in evaluating testing performance, it also provides guidance for product and packaging designs that use failure modes and effects analysis (FMEA).[9] The PDM's NAR Product and Packaging Transit Test Procedure and Performance Standard demonstrate how the PDM's organizational responsibilities influences packaging decisions that create designs that are better for the organization's various needs.

[9] FMEA is a risk mitigation tool that prioritizes different potential failure modes for proactive corrective action based on numeric values assigned to three indices: the occurrence or likelihood of the failure, the severity or impact of the failure, and detection or the ability to detect the failure.

Historical evidence beyond the eliminated external packaging engineering services provider is limited. This historical gap in data neither supports nor contradicts the proposition.

P_3: There is evidence supporting the proposition that the PDM's organizational reporting level influences packaging decisions. Because the PDM department has a senior manager who directly reports to an organizational vice president, the PDM is empowered to pursue EOP on behalf of the entire organization. Evidence includes the PDM's published global engineering standard: NAR Product and Packaging Transit Test Procedure and Performance Standard. This demonstrates the organizational influence that empowers the PDM to make packaging decisions for the organization.

The only historical evidence found that supports the proposition was the reporting level of the external packaging engineering services provider. Although these PDM's were indirectly accountable to individual product development teams, they provided a purchased service and did not hierarchically report within the organization. The influence that this had on packaging decision-making produced suboptimal packaging for the entire organization because they did not emphasize the "total cost of quality" on behalf of the entire organization. No other historical evidence was found to support or contradict the proposition.

P_4: There is evidence supporting the proposition that the PDM's organizational structure influences packaging decisions. This includes the previously described elimination of external PDMs. Other evidence includes the PDM's departmental construct that enables its staff to participate in each of the new product design teams. These individual PDMs are not simply organizationally dispersed as they have "solid line" accountability to the PDM department and

have “dotted line” accountability to their respective design teams. This demonstrates how the PDM’s organizational structure enables the consistent application of the established packaging decision-making process in each of the new product development teams.

Additional evidence includes the PDM’s use of its resources to pursue “minor design revisions.” Although the organization produces “tens of new model introductions every year”, the PDM works on a second classification of projects that are minor packaging design revisions to existing appliance packaging. These projects are typically divided into two types: cost improvements or quality improvements. Regarding the potential design conflicts of cost versus quality in packaging revision projects, the PDM manager states, “For the cost removal or reduction projects we make sure we have a developed [package] and verified [it is] at least as good as the current field quality products.” This demonstrates how the PDM’s organizational structure influences packaging decisions and enables the department to proactively create EOP for new products as well as reactively making packaging revisions that optimize organizational needs.

Historical evidence regarding the proposition is limited due to the use of third-party PDMs. It is clear that the external PDMs did not pursue cost or quality improvement projects on behalf of the entire organization. No addition evidence was found to support or contradict the proposition.

P_5: There is evidence supporting the proposition that organizational frames influence PDMs. This is supported by informant descriptions of the structural, human resource, and symbolic organizational frames that reflect the PDM’s working environment. Framed descriptions of the organization suggest not only a favorable working environment but also one

benefiting from the individual PDMs' personal relationships. While describing an example of a successful packaging design, an informant said, "Well the success went to the team so obviously the product designer as well as the packaging designer won which made us feel very good." This indicates that the organizational frames are positively influencing the PDM at the relationships level.

There is limited historical information regarding PDMs' organizational frames again due to the use of external PDMs. This evidential gap does not contradict nor support the proposition. No evidence was found to contradict the proposition.

P_6: There is evidence supporting the proposition that organizational change influences PDMs. The most significant evidence of this was the previously described elimination of the external packaging engineering services provider. This was strategically done to bring packaged product quality in balance with cost considerations. The organization's historical packaging design emphasis is described as having "more a focus on packaging material costs and maybe a lesser focus on potential damage that could happen to either the product or the package." The influence of organizational change is described, "We have matured in our design process. We have been able to get strong input data. For instance the number of units that come back because of damage and the cost of that damage and the reason for that damage and we make sure we address all of those issues [with] more of a focus today."

The history of organizational change with respect to influences of PDMs is limited to relatively recent events. No other historical evidence was found to support or contradict the proposition.

The influences of organizational behavior on the finished goods PDM and packaging decisions are clear. Their relationship to the different types of packaging designs and subsequent corporate risks are further explored in the intra-case comparison section at the end of the case study.

Embedded Case: Appliance Service Parts

The appliance manufacturer is committed to its products being repairable for 15 years after an appliance goes out of production. This requires the manufacturer to carry an inventory of serviceable repair parts having over 100k different parts or stock-keeping units (SKUs). The diversity of these repair parts is reflected not only in a variety of packaging but also in how packaging is applied. This requires the organization to control packaging as well as the packaging processes.

The organization's control begins with established criteria to determine which parts require packaging designs or are stored in bulk and later "picked and packed" for customer orders. To meet the "pick and pack" criteria, a service part must: sell one piece or less per year; be sold as an individual piece (i.e. not be part of a repair kit); have a value that is less than $100; and not be fragile, heavy, or large. Approximately 60% of the service parts SKUs meet these criteria. The organization has two warehouses for service parts that are "packaged on demand" per consumers' orders. Because the packaging for these parts primarily "contains and identifies", the packaging styles include poly bags, padded mailing envelopes, and corrugated fiberboard shipping cartons. The PDM designs specific packages for the remaining service parts that do not meet the bulk storage criteria.

Although the amount of new service part SKUs is about 6k every year and the majority are similar to existing parts, packaging decisions are typically simple and replicate proven designs. Approximately 300 -400 new service parts are brought to the PDM's attention because of high project sales volumes, are high cost, or they have a unique product design. This requires

the PDM to determine the best packaging that sometimes includes creating novel packaging designs.

The following sections describe the influences that specific organizational behaviors currently have on service parts packaging decisions. A section that describes how organizational change has influenced the PDMs follows these.

Organizational Accountability

The PDM for service parts is accountable to the organization's warehouse operations. From a value chain modeling perspective, the PDM is integrated in the warehousing function that is a primary activity for the service organization. The primary role of warehouse operations is to efficiently store service parts and retrieve them in a timely manner in response to consumers' orders. In the organization's value chain, the warehousing function resides between the inbound and outbound logistics activities. It relies on inbound logistics for optimizing its receiving and stock-keeping activities. In turn outbound logistics requires warehouses to accurately providing service parts that are readily handled and shipped.

The packaging of service parts is a key enabler for the warehousing function to fulfill its responsibilities. The integrated PDM has authority over bulk packaging designs of inbound service parts. Additionally, the PDM is responsible for service parts packaging with respect to warehousing requirements. The PDM's packaging designs support the handling and shipping of service parts. This is the organization's strategic rationale for the PDM being integrated in warehouse operations.

The influences of the PDM's organizational accountability are evident by the amount of annual saving the PDM generates in packaging revisions that are often prompted by concerns

from the warehouse. On average, the PDM saves the organization approximately $450k annually. These savings include organizational costs such as warehousing labor, logistics labor, transportation costs, inventory shrinkage, parts damage, packaging materials, and packaging labor. Packaging concerns raised by the warehouse regarding a particular service part are investigated by the PDM as well as similar parts in a commodity. In this way packaging-related cost reductions are extrapolated beyond the original part concern. Although these packaging revisions are reactive, the findings are proactively applied to future packaging decisions for similar service parts. This demonstrates how the PDM's organizational accountability enables the optimal packaging decisions that benefit multiple functions in the organization.

Organizational Responsibilities

As previously described the PDM's organizational responsibilities include the packaging requirements of the inbound logistics, warehousing, and outbound logistics functions. Additionally the PDM's organizational responsibilities include the organization's purchasing function. With the PDM's support, the purchasing function is able to procure cost-effective packaging materials that satisfy the PDM's other organizational responsibilities. Evidence of this includes the new packaging materials quoting process.

Invariably some new service parts require new and unique packaging materials that do not have established costs. In order to minimize new packaging material costs for the organization, the PDM provides the purchasing function with the names of three potential packaging materials suppliers. The packaging materials buyer then places a request for quote (RFQ) with each of these qualified suppliers. The result of the collaboration between the PDM and buyer enable the organization to minimize its packaging material costs without

compromising the PDM's other organizational responsibilities. This demonstrates how the PDM's organizational responsibilities positively influence service parts packaging decisions and enables EOP.

Organizational Reporting Level

The PDM's organizational reporting level is described as "non-management" but the PDM directly reports to the organization's director of warehouse operations. This organizational reporting level affirms the PDM's strategic value to the warehousing function. Because the warehousing function is integral to its adjacent value chain functions, inbound and outbound logistics, the PDM is positioned to directly respond to and support those functions. Despite its "non-management" status, the PDM is organizationally empowered by being a direct report of the warehouse operations director. This further enables the PDM to make packaging decisions on behalf of the entire organization.

Evidence of this organizational influence is the PDM's authority over inbound bulk packaging. Clearly outside of the PDM's direct responsibilities to warehousing operations, the PDM can intercede with parts suppliers regarding their packaging on behalf of the organization's inbound logistics operation. The bulk packaging of service parts must not only be efficiently handled and unloaded, these same packages are often used to store inventory and later fulfill consumers' orders. By addressing inbound logistics' packaging concerns, the PDM is able to simultaneously improve warehousing efficiencies. This demonstrates the positive influence that the PDM's organizational reporting level has on service parts packaging decisions.

Organizational Structure

The PDM's organizational structure is an individual who is the organization's single point of contact for all packaging-related issues. This configuration emphasizes the PDM's expertise and the inter-personal relationships among the various organizational responsibilities. The PDM's expert knowledge, combined with accessibility, enables packaging decisions that are optimal for the organization. Evidence of the influence that the PDM's structure has on packaging decisions is demonstrated by the PDM's informal mentoring of new packaging material buyers.

The organization uses the purchasing function as entry-level training positions including the packaging material buyer. Because these new buyers typically move on to other positions within 9 to 18 months, employee turnover in the packaging buyer position is common. The current PDM has had 13 different packaging material buyers in 15 years. This organizational churn repeatedly introduces risks to the organization that can potentially lead to costly mistakes due to employee inexperience. The PDM uses personal relationships and expert knowledge to mentor each new packaging material buyer. This inter-personal collaboration makes both employees' work easier while mitigating corporate risks related to packaging. As the PDM describes it, "They really can't screw it up because I am here." The PDM is not organizationally obligated or responsible to train or mentor new packaging material buyers. The organization enables this relationship-based behavior and benefits from it, in part, due to the PDM's structure of an individual.

Organizational Frames

Exploring the organizational influences on the service parts PDM is enhanced from framing perspectives. The current PDM relates to positive organizational influences described by the human resource and symbolic frames. The PDM identifies with the human resource frame's organizational metaphor of a family. For example, familial relationships were described as "treating people as peers." This was particularly evident in the previously described mentoring of newly hired buyers. Rather than assuming a role of superiority by virtue of tenure, the PDM treats these new employees in a familial way and as peers.

The PDM's identification with the human resource frame was more subtly evident by the PDM's own diction. Although the PDM is an individual, self-descriptions used words like "we", "us", and "our". For example, "*We* have to take into account all of their different needs but [then] *we* pretty much make the decision *our*selves." This not only demonstrates the PDM's identification with the organization at the personal level, it also signals a working environment that enables collaborative packaging decision-making.

The PDM identified with the symbolic frame's leadership image of inspiration. Although the PDM directly reports to a director, the PDM describes the working environment as having "lots of latitude". The positive influences of the symbolically framed organization include the PDM's empowerment to pursue EOP designs because people are inspired to "do the right thing." Evidence of this again includes the PDM's mentoring of new buyers, without obligation or duty, because it simply benefits the organization.

Organizational Change

Organizational change has dramatically influenced packaging decision-making for service parts by repeatedly manipulating its historical PDMs' structure. The cyclic structural changes from an individual to a department and back to an individual occurred twice in the last 15 years. The expansions to departmental constructs were strategically made to pursue packaging-related cost reductions. The organization's leadership believed that if a single packaging specialist was able to save hundreds of thousands of dollars in packaging related costs for the organization on an annual basis, additional packaging specialists would multiply that amount and further benefit the organization. The expansion strategy required a new departmental structure consisting of three or more individual PDMs and a PDM manager. This elevated the PDM's organizational reporting level to a first level manager from its non-management status. Because the strategy had limited success both times it was applied, the PDMs' structure reverted to its previous construct of a single PDM specialist. The inability of the organization to sustain PDM departments had several causal factors. Many of these were rooted in the personal behaviors of the organization's leaders and their changing strategic focus.

One reason organizational leaders contracted the PDMs' structure from departments to individuals was the cost savings associated with employee attrition. This included the department's packaging specialists and department managers who were promoted, or made lateral moves, to other positions in the organization without being replaced. Employee attrition occurred because requisitions for replacement PDM specialists and managers went unfilled and were eventually cancelled. Organizational leaders justified the attrition because the headcount

reductions reduced the organization's operating expenses. While enabling the employee attrition to occur may call into question the PDMs' ability to meet the strategic goals of cost reductions due to EOP designs, the contraction strategy clearly indicated a change in the organization's strategic focus. That being the immediate reduction in overhead expenses versus the potential of additional packaging-related cost reductions. The cyclic swings between the expansion and contraction strategies punctuated the PDMs' efforts to pursue EOP. Arguably none of the other organizational behavior variables changed coincidentally with the PDMs' oscillating structures even included the PDMs' organizational responsibility to the purchasing function. What did change was the organization's strategic focus to emphasize and then deemphasize the goal of packaging-related savings. These strategies were directly predicated on the PDMs' resources and caused the cyclic changes to the service parts PDMs' structure and reporting level.

Validation of Theoretical Relationships

Organizational behavior has influenced the packaging of service parts in several ways. This section addresses the previously presented evidence supporting the research propositions. Additional supporting evidence is presented including any evidence that does not support the propositions.

P_1: There is limited evidence supporting the proposition that the PDM's organizational accountability influences packaging decisions. The only supporting evidence found is related the cyclic expansions and contractions of the PDM's resources. The organizational strategy to expand the structure was predicated on the additional PDMs' abilities to create EOP and was not related to any increasing workload of new service parts. The PDM department's

accountability to the warehouse operations function enabled them to identify part candidates for optimizing packaging on behalf of the entire organization. The PDMs' organizational accountability better enabled the identification of opportunities as this had been the historical practice.

There is some evidence that does not support the proposition. The current PDM's organizational accountability is to a primary organizational activity, the warehousing function. Yet the current PDM is able to balance the packaging needs of other primary and supporting activities, those being inbound logistics, outbound logistics, and purchasing. Despite being organizationally accountable one primary activity, the PDM acts as a support activity to three primary activities. It appears that other more influential organizational behaviors enable the PDM to design EOP beyond an organizational accountability to a single primary activity. One possibility relates to the current PDM's structure of an empowered individual. The current PDM is able to use expertise and personal relationships to overcome any potential bias resulting from being accountable to a single primary activity.

Specific historical evidence to support or contradict the proposition was not found. This is because the PDM's organizational accountability has not changed over time and the variable has remained static.

P_2: There is some evidence supporting the proposition that the PDM's organizational responsibilities influence packaging decisions. This is evident by the previously described organizational influences that enable the PDM to make packaging decisions for inbound, logistics, warehousing operations, outbound logistics, and the purchasing function. Additional evidence comes from the packaging decisions for high-volume service parts.

The organization uses a third-party packaging services provider to design and package high-volume service parts such as water filters for refrigerators. Full pallet loads of these high-volume parts come into the organization's warehouses for redistribution to retail partners. The packaging designs for high-volume parts often require specific labeling to assist retail partners' receipts and displays. High-volume parts packaging often have design requirements for the corporation's marketing function such as brand recognition for consumer loyalty. The third-party packaging services provider contractually makes all packaging decisions for these commodities on behalf of the marketing function. As such, the service provider is accountable to the marketing function and is organizationally separate from the service parts PDM. The separation of packaging decision-making responsibilities is due to the marketing function's assumption that its external PDM is better able to fulfill the packaging requirements of high-volume commodities and avoid costly mistakes in the form of product returns and charges from retail partners.

Specific historical evidence to support or contradict the proposition was not found. This is because the PDM's organizational responsibilities have not changed over time and the variable has remained static. No evidence was found that contradicts the proposition.

P_3: There is evidence supporting the proposition that the PDM's organizational reporting level influences packaging decisions. As previously described, the current PDM is non-managerial but directly reports to an organizational director. This relationship empowers the PDM to support and design packaging for multiple primary activities. It enables the PDM to support and make designs that satisfy the organization's purchasing function.

Historical evidence to support the proposition was found. The organization twice raised the PDMs' reporting level to first level management by creating PDM departments with managers. This enabled the organization to strategically emphasize packaging decisions that reduced organizational costs by reviewing packaging design and making them better for the organization. No evidence was found to directly contradict the proposition.

P_4: There is evidence supporting the proposition that the PDM's organizational structure influences packaging decisions. The current PDM's structure of an individual specialist enables packaging decision-making to be on behalf of the service parts organization. This is demonstrated by the PDM having been organizationally empowered through personal relationships and expertise. Not only is the current PDM proven in creating EOP, the organization has demonstrated a preference for an empowered individual PDM by returning to that organizational construct twice after short-lived PDM departments.

The historical evidence regarding the proposition includes an example of a suboptimal packaging design produced, in part, as a result of the departmental construct, specifically individual behavior within that construct. One critical incident described the creation of a costly packaging design for an appliance gasket. Gaskets are used on many appliances such as refrigerator doors to form an airtight seal. Appliance gaskets were historically pliable and "wadded up" before putting them into containers such as plastic bags. Appliance service technicians remove gaskets from their packaging allowing them to "relax" and assume their original shape. The time allowed after unpacking assures that gaskets "memory" enables their successful installation. Product engineers introduced a new gasket material that was less pliable and less costly. The new gasket designers stated a preference that the service part not be bent

or folded to ensure successful installations. The first gasket made of the new material was assigned to a PDM specialist in one of the newly formed PDM departments. Per the gasket designers' preference, the individual PDM created a rigid package design consisting of a corrugated fiberboard carton large enough to contain the unfolded gasket. The packaging design was used and appliance repair technicians appreciated the reduced installation time associated with the new "full size relaxed" gaskets. The cost to the organization for the new gasket packaging was significantly higher compared to previous gaskets packaging. These incremental costs included packaging material and labor, warehouse labor, and outbound transportation expenses. Eventually the packaging design was revisited due to concerns that the design was suboptimal. Performance tests determined that the new gasket material could be rolled up, packaged traditionally in a plastic bag, and be installed while maintaining gasket quality and performance. A collaborative packaging decision was reached within the PDM department to revise the packaging design to the traditional bagging. To further ensure the quality of the gaskets during the packaging process, fixtures were made that allowed gaskets to be rolled up without bends or folds.

Although the packaging change was significantly reduced avoidable costs, subsequent sales of the new bagged gaskets decreased. Appliance repair technicians were reluctance to install rolled up gaskets after having installed "full size relaxed" gaskets. They expressed their displeasure with the revised packaging by not making discretionary gasket purchases for their inventories. The introduction and use of the "full size relaxed" gasket packaging design had negatively impacted the organization's ability to sell gaskets.

The failure in the packaging decision-making process of this critical incident example was the failure to initially design the most optimal packaging. Several behavioral causes were suggested. The individual PDM who created the original design did not collaborate with peers or the PDM manager. The individual demonstrated “hands off” ownership during the design process when peers made design suggestions. This is an example of detrimental individual behavior that did not utilize or accept other individuals’ guidance. While this behavior was neither encouraged nor condoned by the organization, the PDM’s organizational structure of multiple individuals enabled it to occur. Additionally, the PDM departmental leadership failed to require its human resources optimize packaging for the organization. This is an example of detrimental individual behavior at the managerial level that did not convey or require a holistic approach to making EOP decisions. Inexperience was suggested as a contributing factor on both the part of the PDM specialist and the PDM manager. One informant comment regarding the PDM manager stated, “The manager was more interested in being a manger and not an engineering manager” and “he got promoted very fast.”

This example suggests that detrimental individual behaviors can supersede or circumvent well-intended organizational behaviors such as a departmental construct. It highlights the organization’s obligation to mitigate risks due to personal performance issues. This example does not strongly support the proposition because organizational leadership must manage the potential benefits and risks of individual behavior within PDM’s organizational structures. No other evidence was found to contradict the proposition.

P_5: There is evidence supporting the proposition that organizational frames influence PDMs. This is supported by informant descriptions of the human resource and symbolic organizational frames that influence the PDM's ability to pursue EOP.

Support for the influence of human resources frames is evident in the detrimental influences of the individual PDM and PDM manager described in the previous section's example of sub-optimal packaging. This reiterates that organizational frames can have both positive and negative influences on working environments and the creation of EOP. The current PDM is positively influenced by the familial working environment but historical evidence was found of detrimental behavior by PDM *family members.* This resulted in the creation of suboptimal packaging designs that introduced risks to the organization.

Historical evidence regarding PDMs' frames is very limited and as such does not support or contradict the proposition. No other evidence was found to directly contradict the proposition.

P_6: There is evidence supporting the proposition that organizational changes influence PDMs. Evidence of this is how the current PDM has been empowered through changes to organizational behaviors such as structure and responsibilities. Historically, the organization's cyclic changes to PDMs' structure significantly impacted its PDMs both negatively and positively. These impacted the PDM and ultimately the ability to pursue EOP.

No evidence was found that contradicts the proposition.

The influences of organizational behavior on the service parts PDM and packaging decisions are clear. Their relationship to the different types of packaging designs and subsequent corporate risks are further explored in the following intra-case comparison section.

Appliance Manufacturer Intra-Case Comparisons and Contrasts

Comparing and contrasting the influences of organizational behavior among the embedded cases provides additional insight to the propositions including the theoretical relationships to packaging designs and corporate risks. This section begins by comparing and contrasting the assembly components, finished goods, and service parts PDMs with respect to each of the researched organizational behavior variables. A summary of the historical and current organizational behaviors for all PDMs is then presented. The intra-case comparison includes a summarizing table for the PDMs with respect to the research propositions covering current and historical states. The intra-case comparison section concludes by discussing the corporate risks that resulted from, or were avoided by, packaging designs of the appliance manufacturer.

P_1: Regarding organizational accountability, both the assembly components and the finished goods PDMs are accountable to supporting activities in their organizations. This empowers them to make packaging decisions on behalf of the entire organization and not be focused on, or overly influenced by, any particular primary activity. The influences of organizational accountability on packaging decisions are readily demonstrated by the histories of both PDMs.

Assembly components PDMs were historically accountable to local manufacturing plants' materials groups. Prior to three years ago their packaging decisions were primarily focused on their plant's manufacturing needs. This enabled suboptimal packaging to be developed with respect to the entire organizations. The widespread use of expendable containers demonstrates this. Here packaging costs were inconsequential compared to

manufacturing needs. The organization strategically centralized its packaging authority and the new PDM is accountable to the integrated supply team, a supporting activity. The risks to the organization of avoidable costs have been significantly reduced by a new standard that mandates the use of returnable containers. This supports the corporation's strategic commitment to be environmentally responsible.

Packaging decision-making for finished goods historically included a third-party packaging services provider. Those external PDMs were accountable to different product development teams. This led to suboptimal and dysfunctional packaging decisions that emphasized minimal packaging costs and not necessarily packaging performance. Within the last three years the organization strategically eliminated the external PDMs. The current PDM is accountable to the organization's new product development function, a supporting activity. Here the PDM has "full line if sight to the total cost of quality". The risks to the organization such as the tangible cost of damaged goods or the less tangible risk of reduced consumer loyalty have been significantly reduced.

In contrast, the service parts PDM is organizationally accountable to warehouse operations, a primary activity. Despite this accountability the current PDM supports other primary and supporting activities. Clearly the PDM is less influenced by its organizational accountability than its corporate counterparts. This suggests that other organizational behaviors are more influential in enabling EOP. The service parts PDM's organizational reporting level and structure may be more influential and are discussed in more detail in those sections of this intra-case comparison.

In summary, the influences of organizational accountability are clearly demonstrated by two of the organization's three PDMs. This includes the historical packaging related risks to the organization and the minimizing of those risks by strategically manipulating the PDMs' organizational accountabilities.

P_2: Regarding organizational responsibilities, all three corporate PDMs are currently responsible for the packaging needs of multiple primary and supporting activities. This broad range of organizational decision-making responsibilities enables the PDMs to create EOP and not emphasize any particular organizational activity's packaging needs. The assembly components and finished goods PDMs have established packaging decision-making tools and criteria that readily demonstrate the influences of organizational responsibilities on packaging decisions. These formal tools enable the PDM to balance conflicting organizational requirements and create EOP.

Assembly components PDMs were historically responsible for their local manufacturing needs while finished goods PDMs were historically external resources who were focused on packaging costs. Both scenarios enabled the creation of suboptimal packaging that exposed their organizations to risks such as avoidable costs. Some historical finished goods packaging was dysfunctional and introduced risks associated with damaged goods expenses and the loss of consumer loyalty. All of these packaging-related risks negatively impacted corporate profits.

Within the last three years the two organizations strategically manipulated their PDMs' responsibilities to minimize risks and enable EOP. The assembly components PDM was centralized and organizational responsibilities expanded to include the inbound logistics' and the purchasing function's needs. The finished goods PDM brought all design authority "back in

house" to "meet cost and quality criteria." Packaging-related risks to these two organizations have been significantly by modifying their PDMs' responsibilities.

Similarly, the service parts PDM is organizationally responsible for primary and supporting activities but in contrast, the PDM has no formal packaging decision criteria. Instead an informal process is used to account for and balance the sometimes-conflicting organizational demands on packaging designs. This process is viable due to the relationships between the PDM and the different organizational functions. This is demonstrated by the PDM assisting packaging materials buyers in preparing request for quotes. The organization has empowered its PDM to balance organizational responsibilities due to demonstrated expertise and personal relationships. For the service parts PDM, the organizational structure (i.e. an individual specialist) and frame (i.e. human resource) are important influences that enable this informal process to be effective in the pursuit of EOP.

Historically, the service parts PDM's responsibilities were repeatedly manipulated by the organization. The PDMs' cycles between being configured as a department or an individual were based on business strategies to refocus the PDMs' organizational responsibilities. These alternations repeatedly emphasized or deemphasized packaging-related warehousing costs. Because the expansions added resources to pursue cost-reductions for existing packaging designs, the PDMs did not put other function's packaging needs at risk. This maintained an organizational balance for the PDMs' diverse responsibilities. This demonstrates the influence that organizational structure can have when organizational responsibilities are coincidentally manipulated.

In summary, the influences of organizational responsibilities are clearly demonstrated by two of the organization's three PDMs. Evidence includes the historical packaging-related risks to the organization and the minimizing of those risks by strategically manipulating the PDMs' organizational responsibilities. The influences of organizational responsibilities are less pronounced for the service parts PDM. For all three of the corporation's PDMs, the current decision-making processes balance conflicting organizational needs, enable EOP, and minimizing the corporation's risks due to suboptimal and dysfunctional packaging.

P_3: Regarding organizational reporting levels, both the assembly components and finished goods PDMs are management role in their organizations. The PDM managers report to vice presidents. In contrast, the service parts PDM is non-management but does report directly to a director. In all three embedded cases, the PDMs are empowered by their organizational reporting relationships to upper management. The influences that this has had on packaging decisions are evident in each organization.

Assembly components PDMs historically reported to local materials function managers. This did not enable EOP but instead, packaging designs were suboptimal and only fulfilled local manufacturing needs such as throughput and handling. Coincidental with centralization, the organization elevated the new PDM's reporting level to management. The new PDM's manager reports to the senior director for Integrated Supply Chain. This organizational stature better enables the new PDM to create EOP.

The packaging decision-making for finished goods historically included external resources. Because these PDMs were external to the organization they had no organizational reporting level and were directly influenced or biased by their contracts. This limited their

ability to create EOP and sometimes suboptimal and dysfunctional packaging introduced risks such as avoidable costs and customer dissatisfaction. The elimination of the external PDM established the organizational level reporting level for all PDM authority to management role. This in part has contributed to the current PDM's ability to create EOP.

Historically the service parts PDM has alternated between a non-management individual who reported directly to a director or a department with its own manager who reported to the same director. There is evidence of suboptimal packaging designs that occurred when the PDM had its own manager. This was in part due to the reporting level as well as other organizational and personal behaviors. The current service parts PDM is now empowered by directly reporting to a director indicating the individual PDM's authority to make packaging decisions on behalf of the entire organization.

In summary, the influences of organizational reporting levels are demonstrated by all three PDMs. The influences are most obvious for the assembly components PDM. For the other two PDMs, the influences of organizational reporting levels are less obvious and other organizational behaviors, such as PDM structure, coincidentally influence packaging decisions. For all three of the corporation's PDMs, their current reporting levels enable EOP and minimizes the corporate risks due to suboptimal and dysfunctional packaging.

P_4: Regarding PDM's organizational structure, both the assembly components and finished goods PDMs are structured as departments or teams. These PDMs are both comprised of individual specialists and a manager while the service parts PDM is structured as an individual specialist. The influences organizational structures have had on packaging decisions are evident in all three organizations. Examples include the assembly components PDM that

transitioned from dispersed individuals to a centralized team. This was strategically done to reduce organizational risks from suboptimal packaging. The assembly components PDM team is now better equipped to formalize packaging decision-making and produce EOP.

The finished goods PDM's organizational structure has historically included third-party PDMs and suboptimal and dysfunctional packaging was created. In order to reduce packaging-related risks, the organization strategically eliminated third-party PDMs and consolidated all packaging decision-making authority within the PDM department. This has enabled the PDM department to use its resources in new product design teams and make revisions to existing packaging that reduces costs and improves quality. The new PDM department is better able to create EOP due to its revised organizational structure.

In contrast, the organizational structure of the service parts PDM has been repeatedly changed over time and has influenced packaging decisions. The cyclic structural changes between individual specialists and departments have deliberately manipulated the focus of decision makers. This is demonstrated by the organization having twice expanded from individual PDMs to PDM departments in order to pursue cost-saving packaging revisions. There are examples of suboptimal packaging designs that coincided with the departmental structure such as the "full size relaxed" gasket packaging. The current PDM's structure, an individual specialist, has consolidated packaging decision-making efforts and returned the focus to creating EOP for new service parts.

Of particular interest with respect to the organizational structure of the service parts PDM are the cyclic historical changes. For unknown reasons, the organization has repeatedly reversed its strategic approach to its PDM's structure. While the attrition of the PDM's human

resources over time is obvious, it is not clear if this was the cause for structural changes or simply a symptom of alternating strategies. Because the rationale for repeatedly changes is unclear, the potential for future structural changes exists and may even be likely.

In summary, the influences of organizational structure are demonstrated by all three PDMs. Their current organizational structure enables EOP and minimizes the corporate risks due to suboptimal and dysfunctional packaging.

P_5: Regarding organizational frames, all of the PDMs currently fit the human resource frame. This reflects the PDMs' positive working environments as well as their positive personal relationships with the corporation, other organizational functions, and with their own team members. Both the finished goods and service parts PDMs identified with the symbolic frame. This reflects the positive influences that inspire both to pursue their organization's needs. The finished goods PDM further noted the structural frame as reflecting the performance of packaging decision-making processes within the organization.

The human resources and structural frames enable the PDMs to pursue EOP without the negative influences of politically framed organizations. This was demonstrated by the assembly components PDM that experienced negative influences of the political frame. This occurred while some of the manufacturing plants were adjusted to no longer having control of packaging decision-making at their locations.

The negative influences of the human resource frame were indicated for both the finished goods and service parts PDMs. Historically, packaging decision-making for finished goods was supplemented by external PDMs. This left the internal PDM with an incomplete sense of family or a family with estranged relatives. This was the period of time marked by

occasional suboptimal and dysfunctional packaging designs that created risks for the corporations such as diminished consumer loyalty. Regarding familial relationships, an informant described the consequences when the internal PDM did not fully participate in the decision-making process. “Failures occur when we get involved very late in the program. We cannot design in as much value to either the product or the pack in total cost and quality or damage so we end up literally putting Band-Aids on our product to behave as packaging. We are less successful in protecting the product at that point in time and typically the costs are a little bit higher.” Only after the organization internally consolidated packaging decision-making authority that the PDM was able to fully relate to the human resource framing metaphor of a family.

The service parts PDM indicated the negative influences of the human resource frame. This referred to the PDM’s historical structure of a department that had individual specialists, or family members, that occasionally produced suboptimal packaging. The “full size relaxed” gasket packaging is an example of a suboptimal design that caused the organization to incur avoidable costs. Here the human resource metaphor of a family was indicative of family members who can act independently and refuse guidance.

It does not appear that management from any of the organizations deliberately made changes to their PDM’s organizational frames. The PDMs’ work environments and working relationships did improve coincidental with other deliberate organizational changes and as such, the PDMs’ frames typically reflect the influences of those changes. The current PDMs’ organizational frames positively influence packaging designs and EOP designs are being pursued and reducing historical packaging-based corporate risks.

P_6: Regarding organizational change, each PDM has experienced significant changes that impacted most if not all of the researched behavioral variables. Each organization deliberately made changes to their PDMs in order to support emerging business strategies. For assembly components, plant specific packaging decisions were replaced by a central packaging authority in order to emphasize logistical efficiencies and reduce overall packaging costs. For finished goods, external PDMs were eliminated to emphasize the "total cost of quality." For service parts, PDM departments were created to reduce packaging-related costs and individual PDMs were used later used to reduce overhead costs. Each organization recognized the strategic value of packaging with respect to their evolving strategies and made organizational changes to their PDMs.

Deliberate changes to structure-based organizational behaviors, such as PDMs' accountability, were obvious. For assembly components, accountability changes from local supporting activities to centralized supporting activities empowered PDMs to create packaging designs that were optimal for the entire organization. For finished goods, the accountability of external PDMs was shifted to be internally accountable to a supporting activity to reduce packaging-related corporate risks. For service parts, the accountability of individual PDMs was changed to new departmental managers and then back again to an upper management. Accountability to department managers coincided with an effort to minimize avoidable packaging-related costs while individual PDM accountability to upper managers coincided with reductions in corporate overhead expenses.

Deliberate changes to structure-based organizational behaviors, such as PDMs' responsibilities, were obvious. Deliberate changes to the assembly components and finished

goods PDMs' responsibilities were made to rebalance conflicting organizational needs and create EOP. For assembly components, responsibility changes rebalanced inbound logistics and purchasing needs with manufacturing needs reducing corporate risks to due to packaging designs that were manufacturing-centric and suboptimal. For finished goods, responsibilities changed to balance and consider the "total cost of quality". This reduced packaging designs that were focused on dysfunctional low cost packaging and further reduced corporate risks such as avoidable costs and customer dissatisfaction.

For service parts, organizational responsibilities were not changed. Instead, the creation of PDM departments applied new resources to better optimize existing packaging designs by reducing packaging-related costs. Organizational changes that eliminated PDM departments were done to reduce overhead costs. Individual PDM specialists have been tasked with minimizing packaging related costs while creating EOP for new service parts.

Deliberate changes to organizational behaviors that are both structure and relationship-based, such as PDMs' reporting levels, were obvious. For assembly components, PDMs' reporting levels were elevated to empower them within their organization. This reduced corporate risks of suboptimal designs, such as avoidable costs, and better enabled the design of EOP. The PDM's elevated reporting level signaled to other organizational activities that corporate strategies had evolved and required organization-wide commitment.

For finished goods, PDMs' reporting levels were changed for the external PDMs when they were eliminated and all decision-making reported to an organizational vice president. This reduced corporate risks of dysfunctional designs, such as avoidable costs and customer dissatisfaction, and better enabled the design of EOP.

For service parts, PDMs' reporting levels were changed coincidental with the repeated additions and eliminations of departmental manager. There are examples where the incremental management layer enabled suboptimal packaging decisions that created corporate risks in the form of avoidable costs. The elimination of PDM departmental managers elevated the reporting levels of individual PDMs, to become direct reports of a director, EOP was enabled in part due to the PDMs' relationships within the organization and management.

Deliberate changes to organizational behaviors that are both structure and relationship-based, such as PDMs' structure, were obvious. For assembly components, the PDMs' structure was modified from dispersed individuals to a centralized team. This created a team focused on reducing the historical corporate risks of suboptimal designs, such as avoidable costs, and better enabled the design of EOP.

For finished goods, the PDMs' structure changed when external PDMs were eliminated and decision-making was consolidated in the existing PDM department. This reduced corporate risks of dysfunctional designs, such as avoidable costs and customer dissatisfaction. The current PDM's structure has created an environment that learns from suboptimal and dysfunction packaging. An informant described it this way, "the permanent corrective action and then the preventative action are designed processes themselves that may preclude this next generation of product from suffering the same fate." The PDM's changed structure has better enabled the design of EOP.

For service parts, PDM structures were changed coincidental with the repeated expansions and contractions of the PDM resources. While the structural expansions optimized packaging by identifying suboptimal designs with respect to the warehouse function's needs,

the structural expansion enabled occasional suboptimal packaging designs for new service parts sometimes. Corporate risks such as avoidable costs associated with existing packages were reduced but new avoidable costs were not prevented. Contractions of the PDM resources, to the structure of individual PDMs, have refocused packaging for new service parts to improved from design inception. This enables EOP and reduces the potential for packaging-related corporate risks.

Changes to the relationship-based behavior of organizational frames were not intentionally made and were coincidental with other changed behaviors. The influences of these changing frames were not always obvious and often subtle. For assembly components, the negative influences of political work environments is still being experienced as the organizational change to a centralized PDM is still being embraced by all local manufacturing locations. Despite occasional resistance, the new PDM's frame positively influences decision-makers by emphasizing the value and relationships of its human resources. While the organizational frame's ultimate influence on packaging-related corporate risks is not obvious, the new working environment is conducive to organizational collaboration and enables EOP.

For finished goods, changes to the PDM's organizational frame were obvious as the familial working environment grew when decision-making was consolidated internally. External decision-makers were no longer external to the organizational family. The changed work environment further reduced the corporate risks of suboptimal and dysfunctional packaging designs, such as avoidable costs and customer dissatisfaction. The new PDM's organizational frame further enables a working environment where individuals learn from packaging miscues

and error-proof future designs. The PDM's changed frame, while subtle and not directly manipulated, has better enabled the design of EOP.

For service parts, PDMs' organizational frames changed coincidentally with the repeated expansions and contractions of the PDM structure. Expansions to full departments increased the size of the PDM family but occasionally included the negative influences of not necessarily being a close or fully collaborating team. This introduced packaging-related risks from suboptimal designs such as avoidable warehousing, transportation, and materials costs. Contractions of PDM structure, to individual specialists, reinforced the familial feel of the human resource frame. This included accountability relationships with PDMs' managers and relationships to other organizational functions that the PDMs had design responsibilities to. The PDM's changed frame, while subtle and not directly manipulated, has better enabled the design of EOP and reduced the potential for packaging-related corporate risks.

Although the nature of organizational change for the three PDMs was very different, the influences of behavioral changes were often significant. All of the research variables were impacted when packaging decision-making for assembly components was organizationally centralized. Packaging decision-making for finished goods was consolidated internally and impacted all of the research variables. Packaging decision-making for service parts was significantly influenced by repeated organizational changes to the PDM.

Organization change positively influenced each organization's packaging decisions and PDMs. EOP ultimately replaced suboptimal and dysfunctional packaging. In turn, these packaging designs reduced corporate risks.

Organizational change occasionally produced negative influences for the service parts organization's packaging decisions and PDMs. The repeated oscillations between PDM structures of individuals and departments occasionally enabled suboptimal packaging. There was an impact on the PDMs who worked in an environment where structural changes were common. While historical data is lacking, the organization's historical changes to its PDMs' structure may have contributed to the attrition of its human resources. While unproven, it is possible that attrition may have been both cause and effect for repeated changes to the organization's PDM structures.

The following table summarizes the organizational behaviors that influence the appliance manufacturer's assembly components, finished goods, and service parts PDMs (Table 9). Historical organizational behaviors that influenced the PDMs are included.

Table 9. Comparison of the Appliance Manufacturer's PDMs

PDMs	Accountability (P1)	Responsibilities (P2)	Reporting Level (P3)	Structure (P4)	Frames (P5)	Change (P6)
Assembly Components Current	Supply Team (Supporting Activity)	Inbound Logistics, Manufacturing (all locations), Purchasing	Management	Central team with remote individuals	Human Resource, Political (negative)	P1 - P4, (P5); Create central packaging authority for emerging operational cost-reduction strategy; Optimize (leverage) packaging; Eliminate suboptimal Packaging.
Assembly Components Historical	Manufacturing locations' Materials Function	Local Manufacturing	Non-Management	Dispersed individuals	Political (negative)	not applicable
Finished Goods Current	Product Development (Supporting Activity)	Manufacturing, Outbound Logistics, Purchasing, Quality, Trade Partners, Retailers, Consumers	Senior management	Department	Human Resource, Structural, Symbolic	P1 - P4, (P5); Eliminate third-party services provider PDM to pursue EOP; Eliminate suboptimal packaging.
Finished Goods Historical	Third-party service providers (for some Product Groups)	External third-party service providers, some Product Groups	not applicable	not applicable	not applicable	not applicable

Table 9 (cont'd)

PDMs	Accountability (P1)	Responsibilities (P2)	Reporting Level (P3)	Structure (P4)	Frames (P5)	Change (P6)
Service Parts Current	Warehouse Operations (Primary Activity)	Inbound Logistics, Warehouse Operations, Outbound Logistics, Purchasing, Marketing Retail Partners	Non-Management	Individual	Human Resource, Symbolic	P3 & P4; Reduce PDM human resource costs.
Service Parts Historical (Initial)	"	"	Non-Management	Individual	unknown	not applicable
Service Parts Historical (1^{st} change)	"	"	Management	Department	"	P3 & P4 were cyclically altered between a non-management individual and a department having a manger due to alternating strategies that reduced packaging-related costs or PDM human resource costs.
Service Parts Historical (2^{nd} change)	"	"	Non-Management	Individual	"	
Service Parts Historical (3^{rd} change)	"	"	Management	Department	"	

Of particular interest is the organizational independence of its three PDMs. No evidence was found for a corporate-wide packaging decision-making strategy. While the three organizations have made strategic changes to their PDM's to better enable optimal packaging for their respective organizations, the corporation has not coordinated those strategies or organizational behavior tactics. If any packaging-related collaboration opportunities exist among the organization's three PDMs, the potential benefits have not been leveraged.

Case 4: Printing Equipment Manufacturer

This case study is of a Fortune 500 company that manufactures printing equipment for office and production needs. Office products include stand-alone and multifunction equipment that prints, copies, scans, and faxes office documents. For professional printers, the company manufactures digital presses, production printers, and production copiers. The company's diverse finished goods require serviceable parts for maintenance and repairs. Additionally, the company sells "consumables" such as toner cartridges for its finished goods. This creates diverse packaging requirements for the printing equipment manufacturer.

The corporation uses a single PDM group for all of its packaging requirements. While the PDM's organizational configuration has changed over time, the current construct significantly inhibits intra-case comparisons of embedded sub-cases. The following sections describe the single PDM group with respect to the research propositions, supporting evidence, and validation of the theoretical relationships. These are followed by a section focused on the proposed theoretical relationships including how packaging designs contributed to or reduced corporate risks. A summarizing table is presented that compares the corporation's historical PDMs to the current PDM with respect to the research propositions. The case study summary concludes with a brief discussion regarding the lack of embedded sub-case PDMs and potential corporate risks.

Single Case: Printer Assembly Components, Finished Goods, Service Parts, and Consumable Supplies

The following sections describe the influences that specific organizational behaviors currently have on all of the printing equipment manufacturer's packaging decisions. A section that describes how organizational change has influenced the PDMs follows these.

Organizational Accountability

The PDM group is accountable to the organization's transportation function. From a value chain modeling perspective, the PDM is integrated in a supporting activity for the organization. The transportation function supports and manages inbound logistics for assembly components and outbound logistics for finished goods, service parts, and consumable supplies. The role of the transportation function is to ensure damage-free delivery of commodities, optimize handling efficiencies, and minimize transportation costs.

Packaging decisions enable the transportation function to fulfill its supporting role. The integrated PDM is able to directly support the transportation function by making packaging decisions that provide product protection and optimize cube utilization in containers and trucks. This is the organization's strategic rationale for the PDM being integrated in the transportation function.

The influences of the PDM's organizational accountability are evident by a General Packaging Standard created by the PDM. Referred to as the "packaging bible", the scope of the guidance document includes assembly components, finished goods, service parts, and consumable supplies that are "delivered to any manufacturing, distribution facility or end customer, whether from an external supplier or the corporation." The document conveys

packaging guidance and the minimum packaging requirements to suppliers and other organizational functions. The scope of the document is aligned with the transportation function's supporting role to the corporation. This shows how the PDM's organizational accountability influences packaging decisions.

Organizational Responsibilities

The PDM's organizational responsibilities are very diverse and reflect the transportation function's organizational responsibilities to the manufacturing and distribution functions as well as other organizational packaging needs. The PDM's organizational responsibilities support and consider global purchasing, various product engineering teams, the marketing function, as well as the corporation's legal requirements for packaging. Regarding the diversity of packaging responsibilities, an informant said, "It would be easier to say what groups don't have a stake in packaging." Due to this diversity, the PDM's responsibilities can readily conflict and the PDM must often act as a "gatekeeper" for the corporation's competing packaging priorities. In order to ensure EOP, the PDM prioritizes safety, followed by packaging integrity and performance, and lastly cost.

The PDM's Standard Packaging Guide demonstrates the prioritization of potentially conflicting design considerations. The guide emphasizes safety as a design priority by: mandating laboratory testing to ensure packaged product stacking strength; referencing the corporate standard entitled Environmental Health & Safety Requirements for Packaging; including the maximum weight for manually handled packaging; providing instructions on securing packaged freight; and by including a safe stacking height calculator. While some of

these requirements ensure the protection of goods, they also provide for the safety and ergonomics of packaged goods handlers inside and outside of the corporation.

Cost, as a packaging decision priority, is demonstrated in the Standard Packaging Guide. Included in the guide is a packaging decision tree specifically for service parts that emphasizes packaging having the least cost while still remaining functional. For example, the decision tree uses part attributes, such as size and durability, to select the lowest cost option among bagging, wrapping, or boxing parts. The decision tree includes recommendation for secondary and tertiary packaging that emphasizes low-cost packaging material while optimizing space and handling efficiencies. The guide provides detailed evidence of how the PDM prioritizes conflicting organizational needs associated with the PDM's diverse organizational responsibilities. This further demonstrates how the PDM's organizational responsibilities influence packaging decisions and enables EOP to be created.

Organizational Reporting Level

The PDM's organizational reporting level is described as "management." The PDM manager reports to the organization's transportation manager who in turns reports to a corporate vice president. The PDM manager is organizationally empowered to make packaging decisions on behalf of the entire organization.

Evidence of the PDM's organizational authority includes the Standard Packaging Guide that contains corporate-wide packaging and handling requirements. The guide has particular application to suppliers. For example, the guide includes the mandatory requirement for assembly components suppliers to submit a Supplier Packaging Agreement Form. This form is used to document any exceptions to the Standard Packaging Guide for all commodities. This not

only demonstrates the PDM's authority but it further standardizes packaging decision-making for the entire corporation.

Organizational Structure

The PDM's organizational structure is a small group comprised of a PDM manager and four individual packaging specialists. The small size of the PDM group is not indicative of their authority or the amount of packaging decision-making required by the corporation. Instead, their relatively small size necessitated standardized decision-making that is exemplified by the Standard Packaging Guide. The PDM group's creation and publishing of this guide makes packaging decision-making a methodical process that reflects the corporation's various packaging requirements. The documented requirements for packaging encompasses all product commodities including assembly components, finished goods, service parts, and consumable supplies. It is applicable to all commodity sources and better enables the small PDM group to pursue EOP for the entire corporation.

Organizational Frames

Observing the influences of organizational behavior on the PDM is augmented from framing perspectives. The PDM group identifies with both the human resource and political frames. The human resource frame describes the individual PDMs' working environment using the metaphor of a family because they are a "small, close group." Additionally, the human resource frame's leadership image of empowerment was identified. The PDM manager states, "We are very much empowered. In other words, my manager has little knowledge of what we do. He allows me to run it as I see fit… he's very hands-off." This indicates a work environment

where organizational and human needs are aligned. It is indicative of the positive influences that enable the PDM group to quickly and autonomously collaborate with each other in packaging decision-making and to prioritize tasks.

Regarding the political frame, the metaphor of a jungle was identified with and reflects negative organizational influences on the PDM group. Specific issues related to workload were cited. An informant said, "Sometimes there's a lot of work to be done and sometimes it feels like we're putting out fires." This indicates that while the working environment may be familial, it is not without negative influences such as workload-induced stress. Specific evidence regarding how this compromised the pursuit of EOP was not found. Workload issues are further described in the next section on organizational change.

Organizational Change

Organizational change has dramatically influenced the corporation's PDMs. Historically the organization's PDMs were distinctive groups organized according to the commodities of finished goods, service parts, and consumable supplies.[10] Eleven years ago organizational leaders strategically consolidated the PDM groups and created a single PDM authority for all commodities. This influenced several of the research variables significantly.

Organizational change significantly impacted the different PDMs' accountability. Prior to the consolidation strategy the commodity-based independent PDM groups were accountable to various organizational functions. The initial organizational change consolidated the PDMs into a single PDM group that was accountable to the consumable supplies organization. Later the

[10] Historically there was no PDM group for assembly components.

single PDM group's organizational accountability was changed to the manufacturing function. The most recent change to the PDM's organizational accountability was to the transportation function. The justifications for these changes are not fully known. It is known that the accountability change to the current transportation function was done to refocus packaging decision-making on the transportation function's support for other primary and supporting organizational functions.

Prior to their consolidation, the different PDMs' organizational responsibilities were commodity based (i.e. finished goods, service parts, and consumable supplies). It is unknown how, or how well, the PDMs balanced the different packaging needs within their commodity-based organizations. The organizational change to a single PDM group did not eliminate any of the historical PDMs' responsibilities. All of the historical PDMs' various organizational responsibilities and design considerations were consolidated and are now the responsibility of the current PDM.

Historically, the organizational reporting level of the various PDM groups was management role. This remained unchanged during the creation of a singular PDM group. Because they have remained static, organizational reporting levels have not impacted the PDMs compared to the other research variables.

Organizational change had the biggest impact on PDMs' structures. Historically, the organizational structure of the various PDMs consisted of three groups, one each for finished goods, service parts, and consumable supplies. Each group typically consisted of a PDM manager and several individual PDM specialists. The PDM groups' resources were specialized and dedicated to their commodities so they acted independently from each other.

Organizational change consolidated their duties to a single PDM group that is now tasked with packaging decision-making for all of the corporation's various commodities. Although this was done to synergize packaging decision-making by bringing similarly skilled specialists together, the amount of human resources from each PDM group were not combined. The structure of the corporation's consolidated PDM group was a PDM manager and four individual PDM specialists. This coincidental reduction of resources was based in reducing the corporation's human resource expenses.

Organizational change has impacted the PDM's organizational frames. While few details exist regarding the various historical PDM groups, they were structured and functioned much like the current PDM group. This implies that they had human-resource frames due to the familial feel demonstrated by the current PDM group. Similarly, little is know regarding any historical negative influences from organizational frames. It is clear that the current PDM's identification with the negative influences are, at least in part, driven by incremental workload issues. No evidence was found regarding workload issues of the historical PDM groups. These influences were coincidental with the new PDM group absorbing each of the historical PDMs' workload without acquiring their resources.

Validation of Theoretical Relationships

Organizational behavior has influenced the printing manufacturer's packaging for assembly components, finished goods, service parts, and consumable supplies in several ways. This section addresses the previously presented evidence supporting the research propositions. Additional supporting evidence is presented including any evidence that does not support the propositions.

P_1: There is evidence supporting the proposition that the PDM's organizational accountability influences packaging decisions. In order to fulfill the corporate strategy to synergize and consolidate packaging decision-making, the corporation's single PDM group is accountable to the transportation function. There it operates as a supporting activity to the primary activities of inbound logistics for assembly components and outbound logistics for finished goods, service parts, and consumable supplies. Accountability to this supporting function additionally enables the PDM to assist primary and other supporting activities such as manufacturing and procurement functions, respectively.

The PDM's organizational accountability has enabled packaging decision-making to be standardized. Evidence of this includes the PDM's General Packaging Standard that applies to all packaged commodities throughout the entire corporation and its suppliers.

The only evidence that does not support the proposition is the PDM manager's statement that organizational accountability does not necessarily influence packaging decision-making. "We're a service organization. We work on many different programs. We work with many different groups. So where we report doesn't make a huge difference but the transportation group ten years ago scooped us up and yes, I believe it was to get us more focused on that." No specific historical evidence was found to support or contradict the proposition.

P_2: There is evidence supporting the proposition that the PDM's organizational responsibilities influence packaging decisions. The PDM's General Packaging Standard demonstrates the PDM's responsibilities to various organizational functions. The PDM's

standard includes decision-making priorities in order to minimize potentially conflicting organizational responsibilities.

Historical evidence also supports the proposition in that the unaffiliated PDM groups were organizationally responsible to the packaging needs of their particular commodity-based organizations. None of them had the expertise or were responsible for all of the corporation's diverse packaging requirements. No evidence was found that contradicts the proposition.

P_3: There is some evidence supporting the proposition that the PDM's organizational reporting level influences packaging decisions. The historical PDMs were management role and were enabled to focus their resources on creating optimal packaging for their particular commodities. The corporate-wide PDM's organizational reporting level is management. This enables the PDM to autonomously direct its resources to pursue EOP for the corporation's various commodities and functions. Because PDM reporting levels have not varied based on history, the magnitude of the influence that reporting levels have had on packaging decisions is unclear. This suggests that this organizational behavior has had less influence on packaging decisions than other researched behaviors. No evidence was found to directly contradict the proposition.

P_4: There is strong evidence supporting the proposition that the PDM's organizational structure influences packaging decisions. The PDM's structure of a singular group enables packaging decision-making to be centralized for the entire corporation. This is demonstrated by the scope of the General Packaging Standard that encompasses all commodities.

Historical evidence also supports the proposition. The commodity-based PDM groups were not affiliated with each other and as such they were not empowered to make they packaging decisions beyond their own commodities. Only after they were restructured into a single PDM group were they able to pursue EOP for all commodities.

The influence that PDM restructuring had on packaging decisions is also evident from examples of dysfunctional packaging created during the transition. An example of this occurred when an individual PDM within the new PDM group "took a shortcut" and did not fully test a new finished goods packaging design. The reason for this was due to the individual's increased workload associated with the organizational consolidation of PDMs. The PDM specialist made assumption about the new packaging design based on historical performance of similar product packaging. Upon implementation the packaging design proved to be suboptimal because stacking failure began occurring in the distribution environment. A subsequent investigation disclosed the packaging decision-making error and a new design was implemented after thorough testing. While failure of the original design is attributable to the individual PDM's decision-making error, the organization enabled this scenario in several ways.

The organization enabled the dysfunctional packaging design by making assumptions about workload during the PDM consolidation restructuring. An informant described the transition, "Groups were combined and there was too much work to do and the focus wasn't where it needed to be." The organization also enabled the failure by making assumptions about managing the new PDM group. The first manager of the new PDM group previously managed the commodity-based PDM group that comparatively had the least amount of work. This further contributed to the corporation not being aware of the workload issue. While this

evidence includes individuals' performance issues, it demonstrates how PDM organizational structure influences packaging decisions. In this specific example, the corporate management did not anticipate and error-proof workload issues coincidental with restructuring the PDM.

No evidence was found to directly contradict the proposition.

P_5: There is evidence supporting the proposition that organizational frames influence PDMs. This is supported by informant descriptions of the positive influences that the human resource organizational frame has had on the PDM's working environment. The familial and empowering work environment enables interpersonal relationships to contribute in creating EOP. The PDM group demonstrates this by their preference in the description of their organizational structure. While the construct of a PDM manager with four individual PDM specialists suggests that they are a PDM department, they prefer the moniker of *group*. The preference for a less formal description is based on their small size and closeness. This further reflects the positive influences of working in a human resource framed organization.

Negative influences of the political organizational frame were also noted as the working environment was described as a jungle. This negative influence is rooted in the PDM group's workload and frequent "fire fighting." An informant further described the historical and current working environments, "We had more engineers and more hands-on for more products. Now that we've combined the groups there's stuff that we just can't get to." Regarding the influence of consolidated workload on decision-making, "The focus is on things you have to do. Safety and performance are core. These are things that can effect the company." While politically-framed organizations can demonstrate a strengthened focus, especially in times of chaos or

transition, such working environments can be stressful for employees. This influences packaging decisions that can result in dysfunctional packaging designs as previously described.

No historical evidence was found that contradicted the proposition.

P_6: There is evidence supporting the proposition that organizational change influences PDMs. Evidence of this includes how the PDM has been empowered primarily through changes to organizational behaviors such as accountability, responsibilities, and structure. These changes were strategically made by the organization in order capture PDM synergies while reducing human resource costs.

Prior to the organizational changes, the corporation's PDM were accountable to the different organizational groups for finished goods, service parts, and consumable supplies. The PDMs' responsibilities were focused on the particular needs of those separate organizations. The PDMs were structured as small independent groups. The strategic organizational change to consolidate PDMs significantly influenced the corporation's PDMs. The new PDM is organizationally accountable to the corporation's transportation group. The new PDM is organizationally responsible for the entire corporation's various packaging needs and for all commodities. The new PDM is structured as a small consolidated group of individual PDMs having a single manager.

No evidence was found to contradict the proposition.

The influences of organizational behavior on the corporation's packaging decisions and PDMs are clear. Their relationship to the different types of packaging designs and subsequent corporate risks are further explored in the next section.

Printing Equipment Manufacturer: Packaging Types and Corporate Risks

An intra-case comparison is very limited because the printing equipment manufacturer consolidated packaging decision-making for assembly-components, finished goods, service parts, and consumable supplies into a single PDM eleven years ago. Instead of intra-case comparisons and contrasts, this section summarizes the corporate risks that resulted from, or were avoided by, packaging designs at the printing equipment manufacturer. A tabular summary of the organizational behaviors that influenced current and historical packaging decisions and PDMs is included.

P_1: Regarding organizational accountability, the PDM is accountable to the transportation group that is a supporting activity for the entire organization including assembly components, finished goods, service parts, and consumable supplies. The transportation function manages or supports many of the corporation's various primary and supporting activities. The PDM's organizational accountability empowered the creation of packaging standards for the entire corporation and has better enabled EOP for each product commodity

Suboptimal and dysfunctional packaging designs do occur but there is little evidence to directly attribute them to the PDM's accountability. Typically these packaging designs have resulted from the corporation's reliance on suppliers to make packaging decisions, that once discovered, did not adhere to the PDM's General Packaging Standard. While the PDM's empowerment is influenced by organizational accountability, other variables such as structure appear to have more influence on the potential for suboptimal and dysfunctional packaging designs.

P_2: Regarding organizational responsibilities, the PDM is responsible for the packaging needs of multiple primary and supporting activities. This broad range of organizational decision-making responsibilities enables the creation of EOP designs for all of the corporation's packaging needs.

Historically, the independent PDM groups were organizationally accountable to their particular commodity-based groups. Evidence indicating their creation of optimal, suboptimal, or dysfunctional packaging within their organizations is very limited. It is clear that none of the historical PDM groups had responsibilities for the entire corporation like the current PDM. This gives rise to the novel concept that pursuing EOP simultaneously includes all the corporation's commodities. In the case of the printing equipment manufacturer, this rationale appears to have justified the consolidation of the historical PDM groups for synergistic benefits. Despite the intentions of the organizational change, there is minimal evidence of synergistic benefits beyond simple headcount reductions. Instead, there is evidence to the contrary demonstrating suboptimal and dysfunctional packaging designs have resulted due to the PDM's increased workload. These negative influences coincided with the restructuring process and cannot be solely attributed to changed organizational responsibilities or limited synergistic benefits.

The influences of organizational responsibilities on packaging decisions are also demonstrated at the corporate strategic level. The PDM manager acknowledges this and suggests that packaging decisions must always reflect "what management might key on." For example, changes in corporate strategies have included sustainability and the brand's environmental image. Regarding this changed strategic focus, an informant stated, "There is much more focus on the environment than twenty years ago." In response to that emerging

strategy, the PDM co-authored the corporation's Environment, Health & Safety specification. The specification accounts for potential regulations regarding packaging materials such as the proper disposal of foam inserts. Prior to updating the specification, the PDM gathers input from potentially impacted organizational functions in "a team effort". An updated specification is the basis for guidance to sustainable packaging decision-making and is a referenced requirement in the General Packaging Standard. This demonstrates how the PDM's organizational responsibilities influence the creation of EOP at the strategic level.

Suboptimal and dysfunctional packaging designs do occur but there is little evidence to directly attribute them to the PDM's organizational responsibilities. While the PDM's scope of authority is influenced by organizational responsibilities, other variables such as organizational structure appear to have more influence on the potential for suboptimal and dysfunctional packaging designs.

P_3: Regarding organizational reporting levels, the historical and current PDM groups were and are management role. Although the current PDM group is empowered to create packaging standards for the entire corporation, its reporting level is less influential than other organizational behaviors such as accountability. There is limited evidence regarding any negative influences that reporting levels have had on creating suboptimal or dysfunctional packaging.

P_4: The corporation has dramatically changed the structure of it PDMs and influenced packaging decisions. The restructuring of historical commodity-based PDM groups into a single

corporate PDM group has had benefits and introduced corporate risks. Occasionally the risks due to suboptimal and dysfunctional packaging designs have been realized.

For example, rather than having all packaging decision-making reside inside the corporation under the direct control of corporate PDMs, suppliers are authorized to design and test packaging in accordance with the PDM's General Packaging Standard. Occasionally suppliers do not fulfill these packaging requirements and suboptimal and dysfunctional packaging results. An informant stated, "We rely on our vendors. That on paper works well and it actually, for the most part works well, but then occasionally we'll get a call and something is getting damaged and we never saw it and the vendor didn't do it correctly." These dysfunctional packaging designs cause avoidable material and handling expenses to be incurred. They potentially threaten brand reputation through the dysfunctional packaging of finished goods. They can create safety issues as well.

The introduction of packaging-related risks is not as attributable to the PDM's structure of a group as it is to the group's size and its resources. The consolidation of corporate-wide packaging responsibilities did not include the historical number of PDM human resources. The total quantity of the historical PDMs' staff was reduced by at least two-thirds due to restructuring. At the strategic level, it is unclear if the risks and rewards were fully understood by corporate management. It is not known if the corporation made a calculated risk that the potential costs of suboptimal and dysfunctional designs were acceptable and would be offset by savings associated with the headcount reduction. Corporate management made strategic assumptions about the synergy benefits through combined PDM groups. Some synergies have

been realized such as consolidated packaging labs and testing equipment. But it is unclear if any expertise-based synergies have been achieved. Instead workload-based risks persist.

P_5: Regarding organizational frames, the corporate PDM group has both human resource and political framing characteristics. The working environment reflects a group of individuals performing as an autonomous team that benefits the corporation by enabling self-inspired work efforts. This environment also values interpersonal relationships among the individual PDMs and within the organization further enabling EOP. The group's familial character is actually reinforced when members are faced with challenging workload issues and must collaborate to prioritize efforts.

Working environments having workload issues induce employee stress and have the potential to negatively influence packaging decisions. This was demonstrated in the previously described example of the individual PDM who chose not to perform required testing. The resulting dysfunctional packaging design introduced risk to the corporation. While the cause of the failure includes personal performance issues, including management awareness, negative influences of the PDM's political frame is a byproduct of the corporation's consolidated PDM strategy.

Another relationship-based consequence of the political frame is how poor decision-making can negatively reflect on individuals and the entire PDM group. This was demonstrated in the example of the untested packaging design. The packaging design failure created "negative attention" for the entire PDM group and the consequences of the individual's decision reflected poorly on the PDM group as a whole. In a politically framed organization it can have significant negative consequences. The inability to perform tasks is perceived as

weakness and can make the entire group more vulnerable particularly regarding their organizational autonomy. The vulnerability was particularly obvious in this example. The product launched with product pricing was based on the cost of the dysfunctional packaging. The post-launch packaging design change caused a "negative piece part variance." This required the product to be re-priced due to the cost of improved packaging. It was very obvious to corporate management that the PDM group had failed and, as the current PDM manager describes packaging-driven negative piece part variances, "This is worst thing to happen."

The PDM group appears to have adapted to its working environment including the workload-based negative influences. Corporate risk persist because the PDM is reactive and cannot proactively make every packaging decision. Reactions only occur once suboptimal and dysfunctional packaging is discovered after product launches. This is further demonstrated by the PDM's self-described role of "firefighter." While these instances are the exception and not the norm, risks to the corporation continue to exist. There is no evidence of risk mitigation plan and any risks due to suboptimal and dysfunctional packaging appear to be acceptable to the corporate management.

It should be noted that the corporation has not deliberately manipulate the PDM's frames. But negative framed-based influences still exist years after the organization's strategy to consolidate it PDMs.

P_6: Regarding organizational change, the influence on PDMs primarily results from the PDM's organizational structure changes that consolidated PDM resources and authority. Other organizational changes that repeatedly altered the PDM group's accountabilities have been nearly inconsequential. The PDM's last change in organizational accountability was made to

reiterate the importance of the transportation function's packaging needs and as such was more related to strategically rebalancing the PDM's organizational responsibilities. There is little evidence that demonstrates this produced in any tangible changes, positive or negative, with respect to packaging designs or the organization's definition of EOP.

Clearly the corporation's historical and current PDMs have been, and continue to be, influenced by organizational change. It should be noted that organizational changes have been dramatic but are not frequent. This appears to have enabled the PDM to adjust to new working environments that include incremental workload while still pursuing EOP.

The following table summarizes the organizational behaviors that influence the printing equipment manufacturer's historical and current PDMs (Table 10).

Table 10. Comparison of the Printing Equipment Manufacturer's PDMs

PDMs	Accountability (P1)	Responsibilities (P2)	Reporting Level (P3)	Structure (P4)	Frames (P5)	Change (P6)
Single PDM for Service Parts, Assembly Components, and Finished Goods (Current)	Transportation (Supporting Activity)	Inbound Logistics, Manufacturing, Outbound Logistics, Purchasing, Product Development, Marketing, Legal	Management	Small group with a manager	Human Resource, Political (negative)	P1; Re-emphasize Transportation responsibilities.
Historical Multiple PDMs (Initial)	Various Activities	Various and diverse activities per each commodity	"	Independent groups of PDMs each with managers	unknown	not applicable
Historical (1^{st} change)	Consumable Supplies Organization	Inbound Logistics, Manufacturing, Outbound Logistics, Purchasing, Product Development, Marketing, Legal	"	Small group with a manager	"	P1, P2, P4; Consolidation strategy created a single corporate-wide PDM from the historical finished goods, service parts, and consumable supplies PDMs; Reduce human resource costs by reducing the historical PDMs' resources;
Historical (2^{nd} change)	Manufacturing (Primary Activity)	"	"	"	"	P1; Emphasize Manufacturing responsibilities.

Case 5: Computer Manufacturer

This Fortune 100 company manufacturers computers and office equipment for consumers and businesses throughout the world. The range of products includes Internet servers, personal computers, ink jet and laser jet printers, and scanners. The corporation is headquartered in the US, with the majority of manufacturer done in China. With hundreds of product lines, packaging is required for assembly components, finished goods, serviceable parts, and consumable supplies.

The corporation has a PDM group for finished goods only so intra-case comparisons of embedded sub-cases are significantly inhibited. The following sections summarize packaging decision-making with respect to the research propositions, supporting evidence, and validation of the theoretical relationships. The case study summary contains a section describing the proposed theoretical relationships including how packaging designs contribute to or reduce corporate risks. A table summarizing the organizational behaviors that influence packaging decisions of current and historical finished goods PDMs is then presented. The case summary concludes with a brief discussion regarding the lack of embedded sub-case PDMs for assembly components and service parts including potential corporate risks.

Embedded Case: Computer Assembly Components

A formal PDM for the assembly components embedded case could not be identified. This is because external suppliers make packaging decisions for their assembly components. Packaging design guidance only comes from the corporation in the form of generic guidelines or from business groups if components are “complex”. While assembly components packaging

was explored with finished goods PDMs, no additional details were found. For this reason the embedded case study of packaging decision-making for assembly components is very limited. This is further discussed in the packaging types and corporate risks section at the end of the case study.

Embedded Case: Computer Finished Goods

The following sections describe the influences that specific organizational behaviors currently have on finished goods packaging decisions. A section that describes how organizational change has influenced the PDMs follows these. A tabular summary of the finished goods PDM's organizational behaviors is presented that includes references to the organization's historical PDMs.

Organizational Accountability

The PDM for finished goods is accountable to the organization's operations function and, from a value chain modeling perspective, the PDM is integrated in this primary activity of the organization. The operations function supports and manages manufacturing operations globally. The primary role of the operations function is to efficiently manufacture high-quality products that maximize profits and enhances brand reputation. This is accomplished not only through efficient manufacturing but also with packaging that supports other primary and supporting activities such as outbound logistics and marketing, respectively.

Finished goods packaging is a key enabler of the operations function in fulfilling its responsibilities. The integrated PDM is able to make packaging decisions that augment manufacturing processes. Because packaging of finished goods is the last step in the

manufacturing process, packaging decisions must enable and not inhibit manufacturing efficiencies. Additionally packaging decisions must also support outbound logistics, another primary function, as well as supporting activities such as the marketing function. This is the organization's strategic rationale for the PDM being integrated in the operations function.

The influences of the PDM's organizational accountability are evident by packaging assembly instructions. The PDM creates a packaging plan of record (POR) for every product that includes a bill of packaging materials and fully illustrates packaging assembly instructions. The instructions convey how the various packaging components are sequentially applied to the finished goods, such as the initial placement of internal cushions within an erected carton. POR assembly instructions are used by the operations function to ensure that the packaging process is understood, efficiently assembled, and packaging is consistently applied. Packaging decisions that include assembly instructions are designed to match production capabilities and enable operational efficiencies. The creation of packaging assembly instructions is one indication of how the PDM's organizational accountability influences packaging decisions and better enables EOP.

Organizational Responsibilities

The PDM's organizational responsibilities are diverse and include various organizational activities, both primary and supporting activities, as well as external consumers. The packaging requirements of primary activities include operational needs as well as outbound logistics. The packaging requirements of supporting activities include marketing, purchasing, quality, and customer assurance. Other organizational packaging needs include research and development, finance, regional operations teams, and distribution centers. Packaging decisions include end

consumers' requirements who must receive and unpack damage-free finished goods. These diverse organizational responsibilities are evident in each new product's POR.

For example, the PDM creates a POR for finished goods that includes packaging requirements of the organization's primary activities such as the previously described assembly instruction for operations. The PDMs' responsibilities to outbound logistics are included in PORs that contain shipping configuration information. The shipping configuration portion of PORs provides instructions for palletizing packaged finished goods and instructions for loading shipping containers. Shipping configuration information contains illustrations that convey potentially complex interlocking palletization patterns of primary packages as well as potentially complex patterns of palletize goods in shipping containers. These instructions ensure that packaging designs consistently enable outbound logistics efficiencies. Maximizing cube utilization reflects the PDM's organizational responsibilities to the outbound logistics activity and is one way that the PDM enables EOP.

PORs for finished goods reflect the PDM's organizational responsibilities of several supporting activities. For example, the PDM's responsibilities to the purchasing activity are included in PORs. Packaging material costs are automatically inserted into PORs during the packaging decision-making process. This enables PDMs to immediately compare the packaging costs of potential design variations and supports the purchasing function through cost-effective EOP.

PORs for finished goods also include the PDM's responsibilities to external entities such as end consumers. For example, PORs contain unpacking instructions that illustrate how

finished goods should be unpacked by consumers. These portions of PORs reflect the PDM's responsibilities to end consumers as part of the packaging decision-making process.

The finished goods PDM is "constantly balancing" these diverse organizational responsibilities to achieve "optimized packaging." For example, the PDM drafts PORs during the product development phase to include cost drivers associated with proposed packaging designs. The PDM circulates drafted PORs among various organizational functions in order to collect feedback and gain organizational concurrence. The POR vetting process enables the different functions to collectively learn about the enterprise's packaging needs, minimizes cross-functional conflicts, and creates "inertia" leading to EOP decisions.

Organizational Reporting Level

The PDM's organizational reporting level is described as "management." The PDM manager reports to the organization's vice president of operations. This organizational reporting level affirms the PDM's strategic value to the operations function and the organization as a whole. The PDM's reporting level is obvious and reinforces the PDM's stature as the organization's packaging authority. The PDM's organizational reporting level empowers the PDM to make packaging decisions on behalf of the entire organization. Evidence of this includes the previously described POR vetting process that is administered by the PDM and culminates with the PDM making the final decision on packaging designs that best benefit the organization.

Organizational Structure

The finished goods PDMs' organizational structures are departmental and actually comprised of three departments segmented by the business groups for imaging and printing equipment, personal computers and monitors, and the enterprise solutions group. Each PDM department has its own manager and a full staff of individual packaging specialists. Multiple PDM managers and staffs sometime exist within a business group depending on product diversity. For example, the imaging and printing group's PDM department consists of two managers and 18 packaging engineers who are segmented by laser jet and ink jet products.

The organizational structure of segmented PDM departments enables EOP designs in several ways. The departmental configuration enables the autonomous prioritization of packaging tasks such as creating timely PORs. This enables the PDM managers to apply their department's resources as necessary on behalf of the enterprise. The segmentation of PDM departments enables packaging decisions to be specific to product groups and builds expertise. This allows specialized department resources to be embedding in product design teams globally.

Organizational Frames

The finished goods PDMs operate in a human resource organizational frame as evident by informants identifying with both the human resource frame's organizational metaphor and leadership image, those being family and empowerment respectively. The familial organization was demonstrated by individual PDMs who share personal bonds as well as work-related knowledge. This gives rise to the self-described concept of "success dependency." This means

that individuals rely on each other in order for their PDM department to be organizationally successful including the creation of EOP.

Informants identify with the leadership image of the human resource frame because they feel empowered. The organizational empowerment of individuals emanates from supportive leaders. Individuals feel ownership of packaging challenges as well as the pursuit of solutions. In this way individuals are self-motivated to create packaging designs that are optimal for the enterprise.

Organizational Change

Organizational change has dramatically influenced finished goods PDMs. Historically, individual PDM specialists were dispersed among the different business groups and not organizationally connected to each other. In the last four years, the PDMs were made more uniform with respect to the organizational behaviors that influence packaging decisions. Corporate leaders describe this organizational change as "centralization" even though the PDMs are still organizationally segmented in different product groups.[11] The following describes how the organizational change altered each of the researched organizational behaviors.

Historically, the dispersed PDMs' organizational accountabilities and responsibilities were not uniform. Although the PDMs were embedded within their individual product groups, they were inconsistently aligned to various organizational functions at their product

[11] The organizational change is best described as *standardization* because the PDMs were made more uniform with respect to the researched behaviors. The summary uses the organization's terminology of *centralization* to describe the organizational change.

development locations. Their organizational responsibilities also varied from one product group to the next. Although the PDMs had common basic responsibilities, such as designing packaging to protect finished goods, there is no evidence describing how they balanced or prioritized their organizational responsibilities and potentially conflicting packaging needs. It is clear that because they were dispersed they were unable to optimize packaging designs for the enterprise.

Historically, the dispersed PDMs' organizational structures and reporting levels were uniform but very different from the current PDMs. The dispersed PDMs were individual specialists assigned to different locations rather than the current PDM's departmental configuration. Typically their organizational reporting level was "non-management" as they had no subordinates and reported to managers of various organizational functions. While their comparatively lower reporting levels and fewer numbers may have been sufficient for each product group's needs, the organizational behavior inhibited PDMs' ability to make optimal packaging decision for the enterprise.

Historical evidence is lacking with respect to the organizational frames of the dispersed PDMs. It is not known if the dispersed PDMs had working environments that had negative influences or were similar to the current PDMs' human resource frame. It is clear that the current PDM's human resource frame has a family-like relationship that encompasses all of the organization's PDMs. This is due in part to the PDMs being centralized and no longer dispersed.

Validation of Theoretical Relationships

Organizational behavior has influenced the packaging of finished goods in several ways. This section addresses the previously presented evidence supporting the research propositions.

Additional supporting evidence is also presented including any evidence that does not support the propositions.

P_1: There is evidence supporting the proposition that the PDM's organizational accountability influences packaging decisions. For example, the PDM departments are now uniformly accountable to the operations functions of their different product groups. Standardizing the PDMs' organizational accountability was part of the strategic consolidation that was done to optimize packaging for the enterprise.

The organization-wide realignment of PDMs was a key tactic that created the organization's Packaging Management Council (PMC). The council is comprised of PDM managers and several individuals from each product group who routinely meet to discuss packaging-related strategies and sponsor packaging tactics. The PMC enables all of the organization's PDMs to have common "metrics for success." For example, PDMs are responsible for minimizing packaging-related costs. The PMC recently gathered data showing that packaging-related cost-savings had exceeded $48M annually. Another example includes PDMs being responsible to design environmentally responsible packaging. Towards that strategy, the PMC recently created packaging environmental metrics. The new metrics guide PDMs in selecting environmentally responsible packaging materials and techniques. The new metrics quantify how much the different PDM departments are collectively contributing to the corporation's environmental strategy.

The PMC works to standardize packaging decision-making processes for all product groups. For example, packaging plan of record (POR) formats were standardized and are now

uniformly used in all product groups. Additionally, the cross-functional vetting process of drafted PORs has been standardized and is used by each product group.

The PMC standardizes packaging decision-making tools. For example, the PMC recently finalized a corrugated fiberboard engineering standard. The standard defines performance and construction requirements for corrugated fiberboard cartons and enables PDMs to more uniformly design cartons and control costs by choosing cost-effective designs. Similarly the PMC is currently working on engineering standards for pallets that will catalogue all of the standard pallets used by the product groups globally. This will enable all PDMs to select standard pallets when possible and minimize costs by leveraging standard pallet purchase volumes. The standard will define pallet construction and performance requirements enabling PDMs to uniformly create cost-effective custom pallets when standard pallets cannot be utilized. The PMC is working on an engineering standard for cushioning material that is expected to have the same benefits as the corrugated carton standard and the impending pallet standard. The PMC's engineering standards benefit each product group and the corporation by enabling EOP decisions.

The organization-wide realignment of PDMs was a key tactic that created the organization's Packaging Board. The Packaging Board is comprised of representatives from the different product groups, the organization's purchasing and supply chain functions, and PMC leadership. The Packaging Board meets periodically to review corporate strategies with respect to packaging. Similar to the PMC, the Packaging Board sponsors packaging-related "works streams" and efforts, but at the cross-functional strategic level.

Although historical evidence is limited, it is clear that many of the current PDMs' processes and tools were only made possible by the strategic centralization of PDMs, the PMC, and the cross-functional Packaging Board. A key tenet of the centralization initiative was to make all PDM departments uniformly accountable to their product groups' operations functions. No evidence was found that directly contradicted the proposition.

P_2: There is evidence supporting the proposition that the PDM's organizational responsibilities influence packaging decisions. The majority of this evidence comes from PMC actions. For example, the PMC-created POR vetting process gathers feedback and concurrence from various organizational functions that PDMs are responsible for. This ensures that the various PDMs uniformly consider all of their organizational responsibilities during the packaging design phase. Historically, packaging designs were not consistently or uniformly vetted.

Another innovate packaging decision-making tool created by the PMC is a cost model that uniformly represents PDMs' organizational responsibilities. Referred to as a "supply chain opportunities summary", new product and packaging data, such packaged goods weights and dimensions, are entered in the model. Known packaging material and transportation costs are applied to summarize the costs of packaging design options. For example, by manipulating the dimensions of an interior cushioning pad, the PDM can see how packaging performance changes as well as how packaging material and outbound transportation costs vary. The cost model is used proactively for new finished goods and reactively to identify opportunities for designs created before the cost model existed. The PMC-created cost model specifically considers PDMs' organizational responsibilities to the logistics and purchasing functions. This better enables the pursuit of EOP designs.

Historical evidence regarding the proposition is limited but it is known that the PDMs' organizational responsibilities were not uniform within their different business groups. It is unclear how the PDMs' organizational responsibilities were prioritized and balanced when they inevitable conflicted. One informant's example of inherently conflicting organizational responsibilities considers the organization's purchasing and marketing functions. The purchasing function tries to minimize packaging costs while the marketing function prioritizes package branding and shelf-appeal. These two packaging design priorities can readily conflict with each other. Even when all packaging cost information is presented, as is now uniformly done with the cost model and POR vetting process, representatives from these organizational functions still have "convictions that align with their own organizational accountabilities."

The Packaging Board and PMC's standardized decision-making tools and process have enabled a "collective learning" for the entire organization regarding packaging. This fosters packaging decision-making "inertia" that "minimizes cross-functional conflict and enables optimized packaging." Historically, PDMs did not have uniform decision-making tools and processes that included or balanced all of the PDMs' various organizational responsibilities. The historical lack of standard decision-making tools and processes demonstrates how packaging decisions were potentially influenced by the PDMs' different organizational responsibilities. No evidence was found that contradicted the proposition.

P_3: There is evidence supporting the proposition that PDMs' organizational reporting levels influence packaging decisions. The historically dispersed PDMs had lower non-management reporting levels within their product groups. The centralization strategy elevated the PDMs' organizational reporting levels by creating department managers who report to

executives within their product groups. The elevated reporting levels have given PDMs "decision strength" and a "stronger voice" that includes new "political clout and influence" in their business groups and the organization.

Evidence of reporting level influences includes the new Packaging Board that reports to the organization's Supply Chain Board. The Supply Chain Board exists to coordinate strategies for all of the organization's supply chains. The Packaging Board directly supports the Supply Chain Board by coordinating packaging tactics in response to the corporation's evolving supply chain strategies.

For example, the Packaging Board sponsored the PMC work stream to create engineering standards for various packaging materials. These standards contribute to the Supply Chain Board's strategic successes in several ways. Well-defined and standardized packaging materials enable costs to be leveraged by the purchasing function. Manufacturing operations benefit through the efficient handling of standardized packaging materials and packaging assembly instructions. The transportation function benefits from well-defined packaging data such as packaged product weights and dimensional information.

The organization intentionally changed PDMs' reporting level as part of the centralization strategy. This has influenced packaging designs and further empowered its PDMs to create EOP.

Although historical evidence is limited, it is clear that the historically dispersed PDMs generally had lower reporting levels and no centralized packaging authority. For these reasons EOP designs were not pursued. Packaging designs that may have been optimal for a particular

business group were not replicated in other business groups. The evidential gap does not contradict the proposition and no evidence was found to directly contradict the proposition.

P_4: There is evidence supporting the proposition that PDMs' organizational structures influence packaging decisions. The PDMs' departmental structures enable packaging designs to be more uniformly created within the different product groups and across the organization. The structure empowers department managers to internally allocate and prioritize PDM resources. This insulates individual PDM specialists from potential influences of other organizational functions. This enables the established packaging decision-making tools and processes to be used as designed, without organizational bias, and further enables EOP designs.

Historical evidence supporting the proposition is limited. While it is known that prior to the centralization initiative PDMs were individual specialists, the exact influence this structure may have had on packaging decisions is unknown. The influences of other historical characteristics, such as the dispersed PDMs' accountabilities, responsibilities, and reporting levels, are intertwined with the PDMs' organizational structure. This makes the exact source or sources of organizational behavior influences difficult to distinguish from one another. This evidential gap does not contradict the proposition and no evidence was found to directly contradict the proposition.

P_5: There is evidence supporting the proposition that organizational frames influence PDMs. This is supported by informant descriptions of the positive influences that the human resource frame has on the PDM's working environment. PDMs' perceptions of family and

empowerment are deliberately nurtured by the organization. This reflects the central challenge of human resource framed organization to align organizational and individuals' needs.

Evidence of positive influences from the human resource frame includes how the organization fosters its PDMs' knowledge and expertise. For example, the PMC sponsors a "learning & development" work stream and monitors progress as a standing agenda item in PMC meetings. Specifically highlighted is the "continued investment" in the organization's individual packaging specialists. The PMC's focus on employee education has also resulted in several corporate-wide webinars on the subject of packaging. This educates all employees regarding the benefits that packaging designs can have for the organization. Corporate-wide education on packaging contributes to the organization's previously described decision-making "inertia."

The human resource frame's focus on employees is demonstrated within PDM department charters. For example, one charter specifically states, "We develop packaging solutions… by developing a talented team who partners well internally …and externally." One charter also listed "organization & leadership" as a focus area that specifically attempts to "develop our talent & teamwork" and "engage employees."

Although historical data regarding dispersed PDMs is lacking, it is clear that PDMs currently experience positive influences from their working environments and are now better enabled to pursue EOP. An informant stated, "Centralization also drives consistency in decisions and the perception of reliability in the organization." This further demonstrates how the relationship-based human resource frame benefits packaging decision-making. No historical evidence was found to support or contradict the framing proposition.

P_6: There is evidence supporting the proposition that organizational changes influence PDMs. This includes the strategic changes to the research variables made by organizational leaders as part of the centralization initiative. The strategy deliberately standardized the organizational accountability, responsibilities, reporting levels, and structures of PDMs for all product groups. The influence these organizational changes had on the PDMs subsequently influenced their packaging decisions and better enabled EOP.

The centralization strategy influenced the PDMs by altering their organizational frames. Although historical data regarding PDMs' frames is limited, it is clear that the centralization initiative has created a more intense focus on the value of PDM human resources. While changes to the PDMs' organizational frames were not necessarily deliberate and appear to be a byproduct of the centralization strategy, the PDMs have been positively influenced.

Positive influences were demonstrated by a novel packaging design created an individual PDM specialist. The revolutionary packaging design was environmentally friendly, reduced the packaged product weight, lowered costs, and improved space utilization. Because it was a novel design that represented a significant change, it required "convincing" within the organization to adopt it. The design was "championed" by the PDM's department manger and proved to be functional through package testing. Ultimately the design was accepted by the organization and later won a packaging industry design award. This scenario demonstrates how the new PDM departments have a more familial working environment than was experienced by historical PDMs. Employees who have feelings of ownership, pride, and empowerment illustrate the value that the organization now places on its PDMs.

The motivation for the organizational change that influenced the PDMs was strategic. Organizational leaders identified and pursued packaging-related benefits that were tangible, such as reducing operational costs, and had strategic benefits, such as environmental-friendly packaging.

The organization's centralization change has influenced PDMs and enabled an environmental packaging strategic. The new environmental focus is evident within the PMC and the PDM departments. The PMC includes "environment" as a standing agenda topic in its meetings. The PMC's environmental focus enabled the recently completed packaging environmental metrics. The PDM departments also includes "environment" as a focus area. One PDM department charter specifically includes "develop, publish, and implement" a "packaging environmental strategy." Additionally, the PDM department charter includes the task to "develop robust packaging solutions incorporating eco-friendly packaging materials."

Organizational changes were strategically made in order to influence the PDM and capture packaging-related opportunities. This has better enabled EOP designs to be pursued.

No evidence was found to contradict the proposition.

The influences of organizational behavior on the corporation's finished goods PDMs and packaging decisions are clear. Their relationship to the different types of packaging designs and subsequent corporate risks are further explored in a section at the end of the case study.

The following table summarizes the organizational behaviors that historically and currently influence the computer manufacturer's finished goods PDMs (Table 11).

Table 11. Comparison of the Computer Manufacturer's Finished Goods PDMs

PDMs	Accountability (P1)	Responsibilities (P2)	Reporting Level (P3)	Structure (P4)	Frames (P5)	Change (P6)
Central PDM Authority (Current)	Operations functions of each business group (Primary Activities)	Manufacturing, Outbound Logistics, Marketing, Purchasing, Quality, Cost Assurance, Research and Development, Finance, Regional Operations Teams, Distribution Centers, Customers	Management	Departments for each business group'	Human Resource	P1, P2, P3, P4; "Centralization" strategy standardized organizational behavior for each product group PDM; Create organization-wide PDM authority; Leverage packaging benefits for all product groups.
Dispersed PDMs for each business group (Historical)	Various Activities	Various and diverse functions per business groups	Non-Management	Individuals	unknown	not applicable

Embedded Case: Computer Service Parts

A formal PDM for the service parts embedded case could not be identified. This is because external suppliers make packaging decisions for their service parts. Similar to assembly components, packaging design guidance only comes from the corporation in the form of generic guidelines or from product groups if parts are complex. While this type of packaging was explored with assembly components PDMs, no additional details were found. For this reason the embedded case study of packaging decision-making for service parts is very limited. This is further discussed in the following section.

Computer Manufacturer: Packaging Types and Corporate Risks

An intra-case comparison is very limited because the computer manufacturer only has formal PDMs for finished goods. Instead of intra-case comparisons and contrasts, this section summarizes the corporate risks that resulted from, or were avoided by, packaging designs at the computer manufacturer.

P_1: Regarding the finished goods PDMs' organizational accountability, currently all PDM departments are all accountable to the operations function of their individual product groups. Although operations is a primary activity, the PDMs are empowered to make packaging decisions on behalf of the entire organization. One way this has been organizationally made possible is through the use of boards and councils. For example, PDM departments are informally accountable to the PMC. The PMC is in turn is sponsored by the Packaging Board. The Packaging Board is in turn is sponsored by the Supply Chain Board. Each of these boards

incrementally act as supporting functions for the entire organization. The PDMs' informal accountabilities to supporting councils enable PDMs to act with organization-wide packaging authority despite being integrated in a primary activity.

PDM organizational accountabilities, both formal and informal, were deliberately adjusted to be uniform across the finished goods product groups. This component of the centralization strategy has contributed to the pursuit of EOP and has reduced corporate risks associated with suboptimal and dysfunctional packaging types.

P_2: Regarding organizational responsibilities, PDMs are currently responsible for the packaging needs of multiple primary and supporting activities. This broad range of organizational decision-making responsibilities enables finished goods PDMs to create EOP and not disproportionately emphasize any particular organizational activity's packaging needs. The contents of PORs and the cross-functional vetting process demonstrate the positive influences that organizational responsibilities have on packaging decisions. EOP designs are being created based on well-defined and uniform organizational responsibilities. This is exemplified by the previously described award-wining packaging design that was more environmentally friendly and reduced organizational costs.

Historically, PDMs' organizational responsibilities varied among the different product groups. The lack of uniformity inhibited the EOP decision-making. A limited number of suboptimal and dysfunctional packaging examples were found. One example was a packaging design that included a reusable bag for consumers. The design came about because one organizational function, marketing, had excessive influence over other functions' design considerations. Marketing believed that a reusable consumers bag would enhance brand

reputation and the corporation's image of being environmentally friendly. Despite protests from the PDMs representing other organizational responsibilities, the design was implemented. The PDM argued on behalf of the purchasing function that the cost of including a reusable bag would be excessive. Only after implementation did corporate executives become aware that the bags did not fulfill the marketing function's expectations. While potential consumers perceived the bags a wasteful, the corporation incurred "significant" financial costs for two years. Eventually the packaging was redesigned to eliminate the reusable bag. This reduced packaging costs by one-third and saved the organization "millions of dollars." While this example reflects the negative influences of other organizational behaviors such as reporting levels and frames, it demonstrates how historically PDMs' responsibilities were not as uniformly balanced as they currently are. It also demonstrates how organizational responsibilities can introduce corporate risks through suboptimal packaging.

Changes to the PDMs' organizational responsibilities were a key component of the centralization strategy. Organizational leaders recognized that by adding uniformity to PDMs' responsibilities, balance could be achieved and EOP packaging could be pursued. In this way the changed organizational behavior minimized corporate risks.

P_3: Regarding organizational reporting levels, the current PDM managers uniformly report to their product group's operations director. This is a hierarchical elevation from historically lower PDM reporting levels and was changed due to the centralization strategy. Elevated reporting levels further empowered PDMs to make packaging decisions on behalf of the entire organization. The organization's PMC and Packaging Board demonstrate the PDMs' new organizational empowerment. Here PDM managers cross-functionally sponsor packaging-

related work streams and efforts. For example, the packaging environmental metrics was a sponsored project that ensured environmental risks were evaluated as part of the product groups' packaging decision-making process. This illustrates how EOP designs are better enabled by PDM reporting levels and the corporate risk of suboptimal designs has been reduced.

Historically, PDMs' reporting levels were not uniform making dysfunctional packaging designs possible such as the previously described reusable consumer bag. It was suggested by one informant that the marketing function had the "voice of the executives" and that senior executives had been influenced by the incomplete data. It was further suggested that PDM "subordinates" were "afraid to push back" even though they had data supporting their opinions. Although the negative influences of other organizational behaviors are demonstrated in this example, the incident demonstrates how the historical PDMs' lower and non-uniform reporting levels can introduce corporate risks through suboptimal packaging.

Changes to the PDMs' organizational reporting levels were a key component of the centralization strategy. Organizational leaders recognized that by uniformly elevating reporting levels, PDMs would be empowered to pursue EOP. In this way the changed organizational behavior has minimized corporate risks.

P_4: Regarding PDM's organizational structure, PDMs are now uniformly constructed as departments within their product groups. This has positively influenced packaging decisions by allowing specialization with respect to product groups while remaining uniform across the organization. The influence is demonstrated by PORs having a standard development process, format, and a cross-functional vetting process despite being specific to a particular product

group. In this way the organizational construct of departments contributes to optimal packaging for the entire organization and avoids suboptimal and dysfunctional packaging types.

Historically, PDMs were dispersed individuals having little organizational affiliation with each other. While this inhibited their ability to create EOP for the entire organization, it also introduced corporate risks such as suboptimal and dysfunctional packaging types. Because historical evidence is limited, it is unclear which of the decentralized PDMs' organizational attributes potentially had the most negative influence on packaging decisions or directly resulted in suboptimal or dysfunctional packaging. Because the centralization strategy simultaneously manipulated most of the research variables, it is likely that historically negative organizational influences were intertwined. It is clear that the change in organizational structure from individual PDM specialists to PDM departments was coincidental with an increase ability to create optimal packaging designs. In this way the PDMs' new organizational structure mitigated corporate risk from suboptimal and dysfunctional packaging. The deliberate standardization of PDMs' organizational structures into departments was a key component of the centralization strategy.

P_5: Regarding organizational frames, the finished goods PDMs' working environments most closely resemble human resource frames and is evident by decision-making processes that emphasize interpersonal relationships. Positive influences of the human resource frame are evident in the way that the organization values its employees, in particular by developing individual PDM's skills and expertise. By matching employee skills with the organization's business needs, packaging decisions are positively influenced and result in EOP designs. Corporate risks due to suboptimal and dysfunctional types of packaging are reduced.

The positive influences of PDMs' organizational frames are also exemplified in the previously described award-winning packaging design. In this situation the human resource frame discloses that the individual PDMs' packaging design was organizationally unpopular but championed by the PDM's manager. Feelings of trust, empowerment, and participation enabled the PDM to pursue the EOP design. The packaging design eventually reduced several corporate risks including operational costs. It also added value by supporting corporate strategies such environment-friendly packaging.

Historical information regarding PDMs' organizational frames is limited. It is unclear if the decentralized PDMs' organizational frames significantly increased or decreased packaging-related corporate risks. The previously described example of the consumer reusable bag does provide some limited insight to PDMs' historical frames.

For example, the choice to use the consumer reusable bag was both controversial and costly. Informant descriptions of the decision-making process include terms such as "politically made", "marketing had carte blanche", and "subordinates were afraid to push back." Additionally, employee feelings of being "disempowered" were mentioned. All of these descriptions do not reflect a human resource frame where employee skills are valued. Instead it resembles other frames such as the political frame where power is highly valued by the organization and the basis of decision-making.

The packaging design was eventually proven to be both suboptimal abut it introduced several risks to the organization such as avoidable costs that eroded profits. Avoidable costs included the subsequent effort required by PDMs to rework the packaging design. The reusable

bag design also failed to fulfill the strategic intention of improving the brand's environmental reputation. Instead it put brand reputation at risk by projecting a wasteful image.

While it is unknown if organizational leaders deliberately made changes to PDMs frames as part of the centralization initiative, the organizational frames changed coincidental with the centralization strategy. Given the current PDMs' organizational behavior attributes, it seems unlikely that another packaging designs such as the consumer reusable bag could be adopted. This does not mean that consumer reusable bags are inherently suboptimal or dysfunction. It is simply less likely that the PDMs' current organizational frame would hinder employee feedback or input. This is due to the value that the organization places on employees' skills and interpersonal relationships. In this way organizational frames mitigate packaging-related corporate risks.

P_6: Regarding organizational change, finished goods PDMs have experienced significant changes that impacted all of the research variables primarily through the centralization strategy. The changes resulted from an emerging business need to leverage the value of packaging throughout the entire organization. The organization recognized the strategic value of packaging with respect to their evolving strategies and made organizational changes to the PDMs.

Deliberate changes to structure-based organizational behaviors, such as PDMs' accountability and responsibilities, were very obvious. PDM accountability was made uniform with PDMs reporting to product groups' operations managers. PDM responsibilities were changed to make them more uniform regardless of product group. These changes enabled the new PDMs to create EOP designs.

Deliberate changes to organizational behaviors that are both structure and relationship-based, such as PDMs' reporting levels and their structure, were also obvious. The centralization initiative elevated PDMs' reporting levels and structured them as departments. This further empowered PDMs within their product groups and signaled to other organizational activities that corporate strategies had evolved and required organization-wide commitment.

Organization changes to the relationship-based behavior of organizational frames may not have been intentional but were coincidental with other changed behaviors. As such, these are less obvious but none-the-less significant for individual PDMs. Moves to working environments having positive influence further enabled the creation of EOP. The PDMs' new organizational frame fosters an environment that is reducing corporate risks through better packaging designs.

Organization change positively influenced PDMs and reduced the potential for suboptimal and dysfunctional packaging. In turn, these packaging designs reduced corporate risks.

Contrary to finished goods, the corporation does not have formal assembly components or service parts PDMs. This is curious given the corporation having successfully leveraged the packaging-related benefits for finished goods. Potential explanations for this organizational behavior include the assumption that the corporation is not aware of packaging-related opportunities or risks for assembly components or service parts. It is equally possible that corporate leaders assume the magnitude of packaging-related opportunities or risks for assembly components and service parts is inconsequential.

The only evidence found regarding the packaging-related opportunities for assembly components and service parts was one informant's comment, "We rely upon our procurement teams, suppliers, and contract manufacturers to drive efficient decisions for inbound parts and spare parts." The same informant also added that there were "likely opportunities here." There is no evidence that the company intends to create either an assembly components or service parts PDM in the future.

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