Theoretical Basis of Supply Management: Theoretical and Practical Contributions of Agency Theory

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ABSTRACT

This research evaluates the possible contributions of agency theory to supply management. Based on the purchasing year cycle, which outlines the most important tasks of supply management, the purchaser faces 4 critical decision points: make-or-buy, sourcing strategies, supplier relationship strategies as well as contract awarding. The outcomes confirm that agency theory can be a valuable supportive tool to the decision-making process of the purchasing professional concerning sourcing strategies and contract awarding. Agency theory helps create sourcing strategies by taking into account the degree of market uncertainty and offers behavioral- as well as outcome-based contractual mechanisms in order to assure supply. It helps further at the stage of contract awarding by mitigating information asymmetry and opportunistic behavior through agency costs and the right contractual choice in order to align the interests of the principal and agent. Further, agency theory alone seems not to be helpful concerning make-or-buy decisions. However, by extending agency theory with the variable of 'asset specificity' from transaction cost economics, a supporting framework to make-or-buy decisions can be established. Agency theory seems not to be useful in establishing supplier-relationship strategies, due to its aim to reduce information asymmetries. Information asymmetries, however, are often a prerequisite in order to engage in relationships, which aim at boosting innovation.

Keywords

Agency Theory, Information Asymmetry, Opportunism, Bounded Rationality, Agency Costs, Purchasing Year Cycle

1st IBA Bachelor Thesis Conference, June 27th, 2013, Enschede, The Netherlands.

1. THE NEW STRATEGIC ROLE OF PURCHASING: THE PURCHASING YEAR CYCLE

The role of the purchasing function has changed considerably over the last decades. In the past, the strategic value of the purchasing function was regarded as low (McIvor et al., 1997, p. 166). Gradually, the function gained strategic importance. In the 1970s it was perceived as an administrative unit, whereas in the 1980s its contribution to the bottom line was recognized (Cousins et al., 2008, pp. 11-13). Thus, the prior operative approach of purchasing has become strategic supply management (Kraljic, 1983, p. 110). As a result, purchasing is nowadays regarded as a 'strategic weapon' (Bogaschewsky & Glock, 2009, p. 3).

The growing strategic importance of the purchasing function has been accompanied by a huge number of tasks, which are to be fulfilled by the purchasing function. The span of control (i.e. the main responsibilities) of the purchasing function can be summarized as follows: evaluate and select suppliers, review materials bought, act as the primary contact with suppliers and decide how to make a purchase (Monczka et al., 2010, pp. 28-29) However, besides these main activities, the purchasing function has a broader range of objectives, such as the support of organizational goals and objectives, the development of an integrated purchasing strategy in line with corporate objectives, the support of operational requirements, the efficient and effective use of resources, supply base management as well as the development of intra-firm relationships (Monczka et al., 2010, pp. 25-26). The strategic direction of a corporation is outside the range of control of the purchasing function and happens at an earlier stage as the purchasing process itself. Further, the main activities are dependent on supportive processes in order to be efficient and effective. For instance, a sourcing strategy needs a supporting cost- and/or risk-based analysis.

Based on these considerations, the purchasing year cycle is established, which structures the annual activities of the purchasing department (see figure 1):

Anteceding processes: These processes occur outside the range of responsibilities of the purchasing department prior to the purchasing process.

Primary processes: These are the main tasks of purchasing.
Supportive processes: These processes support primary processes.

Anteceding processes
Purchasing targets: The purchasing targets are not made in isolation, but are linked to the corporate strategy (Cousins et al., 2008, pp. 13-15). Further, Reck and Long (1988) argue that at a very high stage of integration, the purchasing function even participates in the process of forming a corporate strategy (Cousins et al., 2008, p. 19).

Demand planning: The second input is the demand planning process, which determines which material has to be bought at a specified quantity and time (Monczka et al., 2010, pp. 33-35). The demand planning process leads to the first decision point: the make-or-buy decision.

Primary processes
Category strategy: Category strategies put similar products/services into one group in order to determine a purchasing strategy (Schiele, 2006, p. 2). According to van Weele (2005) sourcing strategies result in decisions such as global vs. local sourcing, single vs. multiple sourcing or partnership vs. competitive bidding (Schiele, 2006, p. 2). This process determines the second decision point: selecting specific sourcing strategies for each commodity.

Supplier strategy: A supplier strategy establishes the planned purchasing volume on suppliers and defines the relationships. This leads to decision point number 3: selecting supplier strategies and making supplier portfolio decisions.

Quotation, supplier selection and negotiation: This process leads to the final supplier selection, by employing either competitive bidding or negotiation (Monczka et al., 2010, pp. 36-40). This step is associated with decision point number 4: Awarding contracts after negotiating with suppliers and taking the supplier strategies into account.

Operative procurement: Operative Procurement ensures that the outcomes of the negotiation and contracts are being implemented.

Supplier evaluation: This step measures the actual performance of the supplier in terms of for instance delivery, quality, costs and service (Monczka et al., 2010, p. 220).

Supporting processes
Controlling: The supply controlling process measures whether the executional plan was fulfilled according to the plan. It also contributes to demand planning.

Contract Management: This step administrates the contracts and monitors their execution.

Organization and personnel: This step is employed to adapt the structures, processes and workforce, which will enable the execution phase.

Analyses: Analyses serve as input for the category as well as supply strategy. The subjects of these analyses are far-reaching, e.g. cost, market, supply or risk-based.

This research will focus on the agency theory to examine the academic as well as the practical contribution to supply management. The research question is therefore as follows:

What are the practical contributions of agency theory to the decision-making process of supply management?

By using the methodology of a literature review this research inquires the practical value of agency theory to the decision-making process of the supply function. The research is structured as follows: Section 2 outlines the agency theory, its history, assumptions, core model and empirical evidence. Section 3 applies agency theory on the 4 decision-making points of purchasing in order to assess its practical value to supply management.

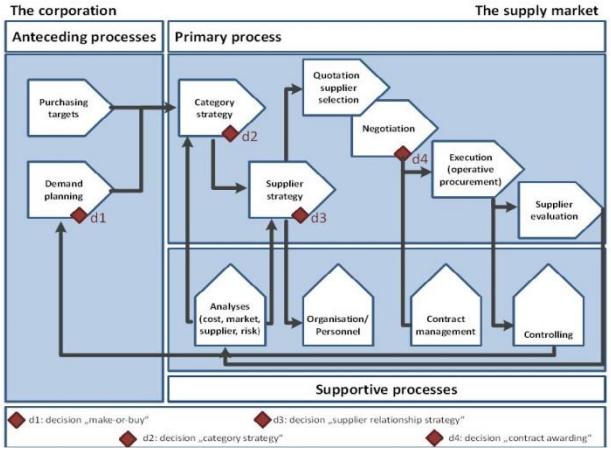

Figure 1. The Purchasing Year Cycle

2. AGENCY THEORY

2.1 The Presence of Agency Theory in Science and Practice as well as Its Possible Contributions to Supply Management

An agency relationship can be described as "(…) a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent" (Jensen & Meckling, 1976, p. 308). The main purpose of agency theory concerns "determining the most efficient contract governing the principal-agent relationship (…)" (Eisenhardt, 1989, p. 58). Inherent in principal-agent relationships is a goal conflict (Waterman & Meier, 1998, p. 174; Wright et al., 2001, p. 413). The goal conflict occurs as actors are perceived as profit maximizers, or homo economics, who aim at maximizing their own profit (Koch et al., 2009, p. 317; Waterman & Meier, 1998, p. 174). Risk-aversion contributes to this goal conflict, as the agent is considered to be more risk-averse than the principal (Williamson, 1998, p. 35). Next to goal conflicts, information asymmetry is part of the principal-agent relationship (Koch et al., 2009, p. 318; Miller, 2005, p. 204; Noreen, 1988, p. 359; Shapiro, 2005, p. 263). Information asymmetries simply occur when "different people know different things." (Connelly et al., 2011, p. 42; Stiglitz, 2002, p. 469). Due to the assumption on human nature (homo economics), risk aversion and information asymmetry, 3 types of opportunistic behavior may emerge: Adverse Selection, moral hazard as well as the hold-up problem (Lubatkin et al., 2005, p. 315; Schölermann, 2003, p. 12). Adverse selection takes place before the contracting phase and occurs when the agent misrepresents his skills (Eisenhardt, 1989, p. 61; Jones, 1995, p. 410). Moral hazard occurs after the contractual relationship has been established. Due to information asymmetry, the actions undertaken by the agent are not observable by the principal (Koch et al., 2009, p. 317; Schölermann, 2003, p. 12; Thomsen & Conyon, 2012, p. 21). This may incline the agent to undertake actions in his own benefit and against the principal's interest. Hold-up problems can emerge as a result of relationship specific investments, which may incline the other party to behave opportunistically (by e.g. raising prices), knowing that the investing party cannot change the relationship without losing this specific investment (Kale & Puranam, 2004, p. 81; Schölermann, 2003, p. 30).

In order to mitigate information asymmetry, agency costs for both parties occur (Jensen & Meckling, 1976, p. 308). Agency costs consist of monitoring costs by the principal, bonding expenditures by the agent as well as the residual loss (Jensen & Meckling, 1976, p. 308). Next to these mechanisms, the right contractual choice helps mitigating agency problems. An outcome-based contract helps align the interests of the principal and agent (Eisenhardt, 1989, p. 60). In this way, agents knowing their incapability are less likely to engage in such a contract and hired agents work towards the same goals as their principals (Connelly et al., 2011, p. 40; Eisenhardt, 1989, p. 60). Eisenhardt (1989, p. 70) found further empirical evidence for the influence of the variables information systems, outcome uncertainty, outcome measurability as well as task programmability on the contractual choice (for more information on empirical evidence, see section 2.5). From these considerations it becomes clear that agency problems can be mitigated through monitoring or bonding expenses as well as through the contractual choice.

The importance of agency theory can be seen in its huge number of applications. Agency theory has replaced the prior corporate logic, in which managers are seen as experts with unique knowledge and stewards of a company (Zajac & Westphal, 2004, pp. 435-436). This shift is accompanied by a stronger role of corporate shareholders in relation to management, as managers are losing their discretion concerning diversification decisions and are becoming more restrained by contractual interest-alignment mechanisms (Zajac & Westphal, 2004, p. 436). The public debate about managerial payments and bonuses underlines the shift towards the agency theory perspective, in which shareholder welfare is first priority (Jensen & Murphy, 1990, pp. 254-255; Zajac & Westphal, 1995, p. 287). Thus, nowadays agency theory is omnipresent in numerous fields, such as business schools, management literature, academic and practitioner journals, business press and corporate proxy statements (Shapiro, 2005, p. 269). Scientific research has applied the theory on accounting, economics, finance, politics, organizational behavior and sociological sciences (Eisenhardt, 1989, p. 57). Thomsen and Conyon (2012, p. 32) refer to the broad application of agency theory, i.e. the basic agency model, enriched with other disciplines such as sociology (embeddedness in social networks instead of a dyadic relationship) or law (regulatory framework) as 'enlightened agency theory'. Further, agency theory is part of new institutional economics (NIE), an economic-based organizational perspective, which embraces social-science disciplines (Klein, 2000, p. 456). Picot et al. (1997, p. 107) divide NIE into agency theory, transaction cost theory as well as property-rights theory. By adding a wide range of aspects into the theory, NIE aims at giving a clearer picture of reality than it has been done by conventional microeconomics, as it has become too abstract and bears few evidence (Coase, 1998, p. 72).

Based on the outcomes of this research, agency theory can also be applied in the decision-making process of the purchasing function in order to serve as supportive tool. The results show that agency theory contributes to the establishment of a sourcing strategy, as it takes into account the degree of market uncertainty and offers behavioral- as well as outcome-based contractual solutions. It also helps the purchasing professional to create the most efficient contractual relationship in the contract awarding phase. Further, agency theory and transaction cost economics provide a supporting framework to make-or-buy decisions. Agency theory is unlikely to be helpful in creating a supplier-relation strategy, due to its aim to reduce information asymmetries, which are perceived as competitive advantage by other theories.

In order to understand todays' importance of agency theory, section 2.2 outlines its historical development in economics, social and political science.

2.2 The Historical Development of Agency Theory

2.2.1 The Emergence of Agency Theory in Economics: Risk Aversion, Goal Conflicts and Information Asymmetry as Main Components

The early antecedents of agency theory can be found in the property rights theory, in which the work of Coase (1937) played a crucial role (Fama, 1980, p. 289; Jensen & Meckling, 1976, pp. 307-308; Kim & Mahoney, 2005, p. 224; Kiser, 1999, p. 149; Nielson & Tierney, 2003, p. 245; Shankman, 1999, p. 321). Coase challenged the neoclassical assumptions of the perfect market, as in such a market, companies would not be necessary, as the market is in a perfect equilibrium. "But in view of the fact that it is usually argued that co-ordination will be done by the price mechanism, why is such organization necessary" Coase (1937, p. 388). The answer to this question, according to Moe (1984, p. 743) was found in the hierarchical structure, transactions costs, and the contractual nature of a company: "(…) the operation of a market costs something and by forming an organization and allowing some authority ("an entrepreneur ") to direct the resources, certain marketing costs are saved. (Coase, 1937, p. 392)." Further, Simon (1947) challenged the neoclassical assumption about human behavior by introducing the concept of bounded rationality (Moe, 1984, pp. 743-744). According to Simon, bounded rationality implies that people are not able to make the best choice possible, as they cannot process information perfectly and therefore engage in satisficing, leading to routine behavioral patterns, which can be steered by organizations in order to develop work routines (Moe, 1984, p. 744).

Agency theory in economics emerged due to the works of Berhold (1971), Ross (1973), as well as Jensen and Meckling (1976) (Kiser, 1999, p. 149; Shankman, 1999, p. 321). Berhold (1971) takes into account different levels of risk preference and analyzes how they affect the contractual choice of the participants. As a result, the more risk-averse agents are, the more they are willing to engage in fixed-price contracts (Kiser, 1999, p. 149). Jensen and Meckling (1976, pp. 305-306) build on Berhold's model and apply it to the special case of owner-manager relationships (Kiser, 1999, p. 149). Thus, early agency theory enriched literature about risk sharing by applying the agency problem to goals conflicts between cooperating parties and between the division of labor (Eisenhardt, 1989, p. 58). The underlying agency relationship can be described as: "a contract under which one or more persons (principals) engages another person (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent" (Jensen & Meckling, 1976, p. 308).

The problem of information asymmetry is inherent inside those relationships, which may lead to opportunism. The notion of moral hazard, which were already well known in the insurance profession and introduced first by Arrow (2004, p. 146) to economics in 1963, by giving the example of the relationship between physician and patient, in which the principal (patient) does not possess the same information as the physician (Laffont & Martimort, 2002, p. 30). The notion of adverse selection was introduced by George Akerlof, who received the Nobel Prize in economics (Thomsen & Conyon, 2012, p. 22).

2.2.2 The Emergence of Agency Theory in Social Science and Political Science: Multiple Principal-Agent Relationships, the Organizational Context, Network Theory as well as Cultural Embeddedness as Contributing Factors

The usage of agency theory in sociological literature is not as common as in economics (Kiser, 1999, p. 162; Shapiro, 2005, p. 265). It draws upon the works of Weber (1978) and economical agency theory (Kiser, 1999, p. 147). Even though sociological work on agency theory is rare, it contributes new facets to agency theory.

Kiser (1999, p. 148) compared the main characteristics of agency theory between economics, sociology and politics. Main differences between sociology and economics are to be found in the meso-level (organizational structure), as well as the macro-level (structural context). Concerning the meso-level, Weber (1978) inquires how decentralized administration could still be ruled by the principal in patrimonialism (Kiser, 1999, p. 160). In comparison to economic agency theory, Weber includes non-instrumental motivations as well as cultural embeddedness and legitimacy of the ruler into the principal-agent relationship (Kiser, 1999, p. 162). Further, the perspective of Weber (1978) concerning agency relationships takes into account the historical context (Kiser, 1999, p. 161). In addition, the network theory is often applied together with the agency problem in sociology (Adams, 1996, p. 12; Granovetter, 1985, pp. 502-503). The usage of the network theory in agency theory contributes to a more realistic picture than the basic agency problem by including several principals and agents (Kiser, 1999, p. 165). Further contributions of sociology include the resource distributions and their impact on the dependence of agents, the cultural perspective as well as different types of agents and their corresponding compliance (Kiser, 1999, p. 166).

Political scientists have employed the economic approach of agency theory more than the one of Weber (Kiser, 1999, p. 154). A first theoretical framework of agency theory emerged in political science independently from economics (Shapiro, 2005, p. 271). In this branch the principal-agent problem is applied to elected politicians, nations or bureaucrats (Shapiro, 2005, p. 271). In comparison to economic agency, political agency theory includes "third parties, administrative procedures, and multiple principals" (Kiser, 1999, p. 156). Additionally, political science enriches the common agency conflict by including goal conflicts among agents and among principals, difficulties arising from group-action and a strong role of third parties involved (Shapiro, 2005, p. 271). Further, the delegation of power encompasses broader political motivations of the principal, such as gaining credibility (Shapiro, 2005, p. 271). Moreover, in comparison to economic theory, political science emphasizes stronger the way of how principals control agents, including the selection process, statutory control as well as sanctions, such as budget cuts or firing of officials (Shapiro, 2005, p. 271).

Even though agency theory emerged in different disciplines, its assumptions about human nature and the company as nexus of contracts stays the same in all these branches. The next section deals therefore with the underlying assumptions, which are necessary in order to understand the core model.

2.3 Assumptions of Agency Theory

2.3.1 The Company as a Nexus of Contracts, Information as a Purchasable Commodity, the Homo Economics and Bounded Rationality

Agency theory defines companies as a nexus of contracts (Adams, 1994, p. 8; Fama & Jensen, 1983, p. 302; Jensen & Meckling, 1976, p. 311; Kiser, 1999, p. 149; Williamson, 1988, p. 569). The term 'contract' implies "a legally binding agreement that is the result of an offer and acceptance, with an agreed consideration" (Monczka et al., 2010, p. 329). The agent provides his assets in exchange for compensation (Boatright, 2002, p. 1838). The contract between the principal and agent results from bargaining as well as the legal environment, which enforces and limits these contracts (Boatright, 2002, p. 1838). The company takes the coordination role between both parties and exercises discretion concerning the fulfillment of contractual obligations (Hansmann & Kraakman, 2000, pp. 808-809). Further, it is assumed that contracts are incomplete (Hendry, 2002, p. 99). In the framework of complete contracts, all possible eventualities are mentioned in the contract, so that no residual claims are left, which are outside the contract (Kim & Mahoney, 2005, p. 227). An incomplete contract, however, implies that external factors are not perfectly foreseeable, which leads to outcome uncertainty (Hendry, 2002, p. 99). As a consequence, risk emerges which has to be allocated among the contracting parties (Eisenhardt, 1989, p. 61).

However, the allocation of risk cannot easily be done, as the principal is assumed to be less risk averse than the agent due to the fact that the principal can diversify his investment, whereas the agent is dependent on the project assigned to him (Wiseman & Gomez-Mejia, 1998, p. 133). This degree of variability in risk explains why contracts are not always most efficient, as agents prefer a fixed salary over a variable one, even if a variable pay would be more appropriate (Kiser, 1999, p. 149). Agency theory further perceives human as opportunistic and as utility maximizers (Hendry, 2002, p. 99). The so-called homo economics acts opportunistically, driven by the desire to maximize his own utility (Davis et al., 1997, p. 20; Jensen & Meckling, 1976, p. 308). The last human assumption to mention concerns the notion of bounded rationality (Eisenhardt, 1989, p. 58; Williamson, 1988, pp. 569-570). It can be defined as "rationality exhibited by human behavior" (Selten, 1998, p. 413). In other words, bounded rationality implies language- as well as neurophysical limits (Cousins et al., 2008, p. 30). This impacts the notion of contractual completeness: "As a consequence [of bounded rationality], incomplete contracting is the best that can be achieved" (Williamson, 1981, p. 554).

Further, agency theory assumes that information is not equally distributed. As a result, information asymmetry is inherent in a principal-agent relationship (Hendry, 2002, p. 99). In agency theory, information is treated as a purchasable commodity (Eisenhardt, 1989, p. 58; Macdonald, 1984, p. 417). This means that the principal, in order to minimize information asymmetry, can invest in monitoring systems (Macdonald, 1984, p. 417). Information asymmetry is rooted in the fact that the agent knows his own skills and abilities, his behavior as well as information about the company better than the principal does (Cousins et al., 2008, p. 19).

2.3.2 Assumptions of Agency Theory in Comparison to Transaction Cost Economics, Theory X and Y as well as Organizational Capabilities Perspective

Agency theory and transaction cost economics (TCE) share the same assumptions about human nature (homo economics) (Cousins et al., 2008, p. 30; Williamson, 1981, p. 553). Further, both theories also share the assumption about bounded rationality (Williamson, 1988, pp. 569-570). In addition, both theories are concerned with the establishment of efficient contracting relationships (Williamson, 1988, p. 569). The difference between the theories is the ex-ante as well as post-ante contractual interference: whereas agency theory aims at reducing agency problems ex-ante through interest alignment, TCE aims at adjusting ex-post misalignments, for instance judicial contract enforcement costs (Williamson, 1988, p. 569). Thus, whereas TCE aims at reducing ex-post transaction costs, agency theory tries to align the goals of the contracting parties, so that transaction costs will not occur after the implementation of the contract.

The assumptions of agency theory concerning the human nature resemble those of Theory X by Mc Gregor (1966). Theory X is based upon the human assumption that employees would be passive without management intervention (Mc Gregor, 1966, p. 7). In this view "the average man is by nature indolent", "self-centered, indifferent to organizational needs", "by nature resistant to change" and "gullible, not very bright." (Mc Gregor, 1966, p. 7). McGregor states, however, that this theory does not lead to efficiency. Based on the hierarchy of needs, as introduced by Maslow (1943, pp. 380-383) McGregor develops Theory Y, in which people are perceived as intrinsically self-motivated: "The motivation, the potential for development, the capacity for assuming responsibility, the readiness to direct behavior toward organizational goals are all present in people" (Mc Gregor, 1966, p. 11). Theory Y stands thus in stark contrast to agency theory.

A further divergence can be found between agency theory and the organizational capabilities perspective. Agency theory tries to minimize information asymmetry and to align goals and behaviors, whereas the capabilities perspective sees a competitive advantage in the heterogeneity of those aspects (Langlois & Foss, 1999, p. 213). In this perspective, organizational knowledge can be found in various factors, such as the culture of an organization, its people, tools, routines, processes, systems and technology. By internal knowledge-sharing, the company gains a competitive advantage through increasing its absorptive capacity (Schiele, 2007, p. 282) . Thus, according to the capabilities perspective, heterogeneity can contribute to increase the absorptive capacity of a company and therefore its competitive advantage (Cohen & Levinthal, 1990, p. 131; Zahra & George, 2002, p. 193).

The contractual perspective of agency theory as well as its assumptions about human nature and information are necessary in order to understand its core model, which is presented in the following section.

2.4 The Core Model: Goal Conflicts, Information Asymmetry, Opportunism, Agency Costs and Contractual Type

An agency relationship can be described as "(…) a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent" (Jensen & Meckling, 1976, p. 308). Thus, the basic agency problem is concerned with the (contractual) relationship between a principal and an agent. The principal provides the agent with authority in order to fulfill the task in the principal's best interest (Ross, 1973, p. 134; Wright et al., 2001, p. 413). The basic agency problem is to be understood as relationship between two parties, which implies a distinction between principal and agent (Thomsen & Conyon, 2012, p. 35; Wright et al., 2001, p. 414). Given these considerations, the main purpose of agency theory concerns "determining the most efficient contract governing the principal-agent relationship (…)" (Eisenhardt, 1989, p. 58).

Inherent in principal-agent is a goal conflict (Waterman & Meier, 1998, p. 173; Wright et al., 2001, p. 413). The goal conflict occurs as actors are perceived as profit maximizers, or homo economics, who aim at maximizing their own profit (Koch et al., 2009, p. 317; Waterman & Meier, 1998, p. 174). For instance, managers as agents can use a huge number of perquisites, which favors only their own benefit (Shleifer & Vishny, 1989, p. 123). Risk-aversion contributes to this goal conflict, as the agent is considered to be more risk-averse than the principal (Williamson, 1998, p. 35).

Next to goal conflicts, information asymmetry is part of the principal-agent relationship (Koch et al., 2009, p. 318; Miller, 2005, p. 204; Noreen, 1988, p. 359; Shapiro, 2005, p. 263). Information asymmetries simply occur when "different people know different things." (Connelly et al., 2011, p. 42; Stiglitz, 2002, p. 469). Information asymmetry includes 'hidden characteristics', 'hidden action', 'hidden information' and 'hidden intentions' (Schölermann, 2003, p. 12). Information asymmetry, in combination with profit-maximizing behavior can lead to three kinds of opportunism:

Adverse selection, moral hazard and the 'hold-up' problem (Lubatkin et al., 2005, p. 315; Schölermann, 2003, p. 12). If the principal has not enough information to verify the agent's capabilities, adverse selection problems might occur (Connelly et al., 2011, p. 42). Adverse selection takes place before the contracting phase and occurs when the agent misrepresents his skills (Eisenhardt, 1989, p. 61; Jones, 1995, p. 410). The agent has thus more information than the principal and misrepresents his skills (hidden characteristics) in order to establish a contractual relationship (Thomsen & Conyon, 2012, pp. 21-22). The second type of information asymmetry occurs when the principal cannot observe the agent's behavior, which can lead to moral hazard problems (Connelly et al., 2011, p. 42). Moral hazard occurs after the contractual relationship has been established. Due to information asymmetry, the actions undertaken by the agent are not observable through the principal (hidden action as well as hidden information) (Koch et al., 2009, p. 317; Schölermann, 2003, p. 12; Thomsen & Conyon, 2012, p. 21). Moral hazard emerges because of the separation of decision-making and risk bearing (Phillips et al., 2003, p. 483). To take the manager-owner problem again, the manager does not own the company and thus does take economic risks such as profit losses or bankruptcy, but has the right to make decisions (Thomsen & Conyon, 2012, pp. 178-179). This may incline him to take decisions favoring his own goals instead of making decision favoring the principal. Further, due to hidden intention, hold-up problems may occur (Schölermann, 2003, p. 12). Hold-up problems emerge as a result of relationship specific investments, which may incline the other party to behave opportunistically (by e.g. raising prices), knowing that the investing party cannot change the relationship without losing this specific investment (Kale & Puranam, 2004, p. 81; Schölermann, 2003, p. 30).

In order to mitigate information asymmetry, agency costs for both parties occur (Jensen & Meckling, 1976, p. 308). Agency costs consist of monitoring costs by the principal, bonding expenditures by the agent as well as the residual loss (Jensen & Meckling, 1976, p. 308). Monitoring costs refer to control mechanisms installed by the principal in order to ensure the

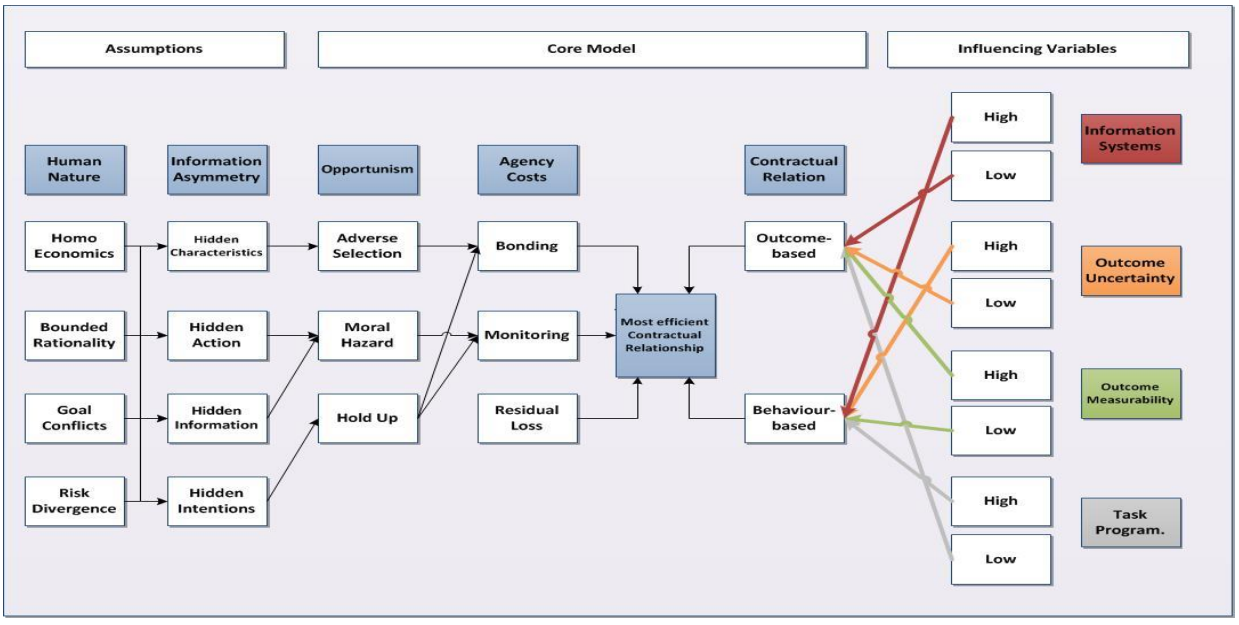

Figure 2. The interrelations of agency theory: assumptions, the core model and influencing variables

agents desired behavior and to prevent him from moral hazard (Jensen & Meckling, 1976, p. 308). As information is treated as purchasable commodity, the principal can invest in monitoring systems in order to mitigate information asymmetry (Eisenhardt, 1989, p. 59). A board of directors inside a listed company is a typical control mechanism by shareholders in order to control the Chief Executive Officer (CEO) (Thomsen & Conyon, 2012, p. 142). The installment of monitoring systems makes the agent more likely to behave in the principal's interest (Eisenhardt, 1989, p. 60). Bonding expenditures refer to the resources the agent needs to guarantee not to take action against the principal or compensation in case the agent takes those actions (Jensen & Meckling, 1976, p. 308). Signaling theory is concerned with mitigating information asymmetry between two parties (Connelly et al., 2011, p. 40; Spence, 2002, p. 434). The party holding more information (the agent) uses signals to increase information of the other side (principal) (Spence, 2002, p. 434). For instance, a manager conducting a diversification strategy might signal the value of strategy by increasing his stocks in the company, thereby signaling that diversification is not only made in order to reduce his own private risk, but also to increase the overall shareholder value (Connelly et al., 2011, p. 40; Goranova et al., 2007, p. 214). Residual costs refer to decision made by the agent, which are in contrast to the maximization of the principal's welfare, even if monitoring and bonding are optimally fulfilled (Jensen & Meckling, 1976, p. 308).

Next to the above mentioned mechanisms, the right contractual choice helps mitigating agency problems. An outcome-based contract helps align the interests of the principal and agent (Eisenhardt, 1989, p. 60). In this way, agents knowing their incapability are less likely to engage in such a contract and hired agents work towards the same goals as their principals (Connelly et al., 2011, p. 40; Eisenhardt, 1989, p. 60). Eisenhardt (1989, p. 70) found further empirical evidence for the influence of the variables information systems, outcome uncertainty, outcome measurability as well as task programmability on the contractual choice (for more information on empirical evidence, see section 2.5). The installation of information systems is positively related to behavior-based contracts, as the behavior of the agent becomes observable (Eisenhardt, 1989, p. 61). As outcome uncertainty increases, behavior-based contracts become more appropriate, as a risk-averse agent would require a risk-premium on outcome-based contracts (Eisenhardt, 1989, p. 61). The measurability of the outcome is positively related to outcome-based contracts (Eisenhardt, 1989, p. 62). In addition, if a task is programmable in advance, i.e. the tasks are clearly defined, a behavior-based contract is more appropriate than an outcome-based contract, as programmed job routines reveal the behavior of the agent (Eisenhardt, 1989, p. 62).

From these considerations it becomes clear that agency problems can be mitigated through monitoring or bonding expenses as well as through the contractual choice. Figure 2 visualizes the core model of agency theory as well as its mechanisms to reach an optimal contractual relationship.

This section has described the basic agency problem and its components. Section 2.5 outlines the empirical evidence of agency theory.

2.5 Empirics

2.5.1 Empirical Evidence of the Positivist Agency Stream (the Owner-Manager Problem): Information to Verify the Agent's Behavior as well as Outcome-Based Contracts Make the Agent Work in the Principal's Interest

This section deals with the empirical evidence of the agency theory. Agency theory offers a solution to optimal contracting and can therefore be a useful tool of supply management. There is scientific evidence for the positivist agency stream, and mixed evidence concerning the principal-agent research stream on various independent variables.

The agency theory has been mostly applied to the relationship between owners (stockholders) and managers inside listed corporations (Eisenhardt, 1989, p. 59; Kiser, 1999, p. 150). Eisenhardt (1989, pp. 68-69) reviewed scientific literature regarding the positivist agency stream (the owner-manager problem) and found supporting evidence. Some of these outcomes are presented in the following paragraph.

Amihud and Lev (1981, pp. 610-612) test the hypothesis that risk-reduction activities are more common in manager-controlled than in owner-controlled companies in 309 fortune 500 companies from 1961-1970. Agency theory assumes that managers are risk-averse and principals are risk neutral and predicts therefore that managers-controlled companies are more likely to diversify than owner-controlled companies (Amihud & Lev, 1981, p. 606). The results of the study confirm the hypothesis (Amihud & Lev, 1981, p. 615). Walkling and Long (1984, p. 54) test the agency theory in relation to takeover bids. The sample comprises all (105) tender offers which were filed at the Securities and Exchange Commission from 1972-1977 (Walkling & Long, 1984, pp. 57-58). The results are in line with the managerial welfare hypothesis, namely that managers put more emphasis on their own welfare than on their principals when deciding to accept or refuse takeover bids: "The results presented here provide substantial evidence that the decision to contest a tender offer is conditioned on personal wealth changes" (Walkling & Long, 1984, p. 67).

Kosnik (1987, p. 163) inquires the board effectiveness of 110 companies in relation to greenmail payments. Those 110 companies were taken from the Wall Street Journal Index from 1979-1983 (Kosnik, 1987, p. 172). Greenmailing is the practice of buying companies stock in order to threat a takeover, and reselling these stocks at a premium price (Kosnik, 1987, pp. 164-165). Buying greenmail stocks is regarded as negative from a shareholder perspective, as it reduces the firm value. Thus, when engaging in these purchases, managers tend to put their own utility about the one of their principals (Kosnik, 1987, pp. 164-165). Boards serve as monitoring mechanism for stockholders, as they monitor managers and direct their behavior through incentives and sanctions (Thomsen & Conyon, 2012, p. 56). The outcomes of the study are in line with agency theory prediction: The most influential determinant concerned the managers own stock inside the company: The higher the manager's own stocks in the company in relation to their fixed income and bonuses, the less likely that the company engages in greenmail purchase (Kosnik, 1987, p. 178). Further, as predicted by the agency model, the higher the number of outside directors, the less likely the company is to engage in greenmail purchasing (Kosnik, 1987, p. 179).

The studies observed by Eisenhardt confirm that opportunistic behavior exists in principal-agent relationships. Further, the propositions of the positivist agency stream, namely that outcome-based contracts (e.g. in form of stock options) as well as information to verify the agent's behavior makes agents behave in the interest of the principal (Eisenhardt, 1989, p. 69).

The next section deals with the principal agent stream, which inquires which independent variables influence the contractual choice.

2.5.2 Empirical Evidence of the Principal-Agent Stream: Information Systems and Outcome Measurability Are Positively Related to Outcome-Based Contracts; Outcome Uncertainty and Task Programmability Are Positively Related to Behavior-Based Contracts

Eisenhardt (1989, p. 69) further reviewed the empirics of the principal agent stream. This stream "involves careful specification of assumptions, which are followed by logical deduction and mathematical proof" (Eisenhardt, 1989, p. 60). Thus, in comparison to the basic agency model, these variations change static assumptions and make them become variables, such as the level of information systems, degree the risk-aversion of the principal and agent, the level of goal conflict, task programmability, outcome measurability as well as the duration of the relationship (Eisenhardt, 1989, pp. 61-63). Eisenhardt (1989, pp. 66-67) reviewed several articles, which tested these independent variables in relation to the dependent variable contract type, with its attributes behavior-based contract and outcome-based contract. Agency theory was supported for the variables information systems, outcome uncertainty, outcome measurability and task programmability in relation to behavior-based or outcome-based contracts (Eisenhardt, 1989, p. 70). For this reason the following relationships are supported by evidence (Eisenhardt, 1989, pp. 61-62):

- The more information systems are installed, the more appropriate are behavior-based contracts and the less information systems are installed, the more appropriate are outcome-based contracts
- The more certain the outcome, the more appropriate are outcome-based contracts and the less certain the outcome, the more appropriate are behavior-based contracts
- The more measurable the outcome, the more appropriate are outcome-based contracts and the less measurable an outcome, the more appropriate are behavior-based contracts.
- The more programmable a task, the more appropriate are behavior-based contracts and the less programmable a task, the more appropriate are outcome-based contract.

It becomes clear that agency theory is supported by empirical evidence. The importance of agency theory, as outlined in section 2.1, in combination with confirming empirical evidence makes agency theory worthwhile to be tested concerning its practical value in supply management. Section 3 deals with agency theory and its contribution to purchasing.

3. AGENCY THEORY AND ITS CONTRIBUTION TO PURCHASING

3.1 Agency Theory Applied to the Critical Decision Points of Supply Management

3.1.1 Agency Theory and the Make-or-Buy Decision: Agency Theory in Combination with Transaction Cost Economics Offers a Valuable Supporting Framework

Eisenhardt (1989, p. 65) states that outcome uncertainty, which includes among others technological change, government policies or economic climate, in combination with risk preference of the contractors, determines the make-or- buy decision. Thus, even if outcome uncertainty is high, a risk-neutral principal may not choose the 'make' option in order to mitigate the uncertainty (Eisenhardt, 1989, p. 65). On the other way round, risk-averse principals may opt to 'buy' in order to shift the risk to the supplier (Eisenhardt, 1989, p. 65). Further, the degree of outcome measurability may influence the make-or-buy decision, as joint efforts may lead to shirking problems in a supply chain, which can be reduced by vertical integration (Mahoney, 1992, p. 563). These findings may explain the behavior of whether to make a product in-house or to buy it, but they provide only few guidelines to the purchasing professional of how to come to this conclusion. Thus, it becomes clear that agency theory alone does not offer valuable tool to help the purchaser make a sound decision.

Mahoney (1992, p. 563) offers a framework to the make-or-buy decision by combing several variables of the agency theory with variables of transaction cost economics (see figure 2). The variables task programmability (the tasks to be done by the agent can easily be prescribed in advance) and non-separability (the outcome of a task cannot be traced back to a specific agent) are taken from agency theory, whereas transaction cost economics considers asset specificity, which is associated with a high strategic value (Mahoney, 1992, pp. 575-576). Depending on the 3 variables, the framework offers 8 different contractual arrangements, which will be succinctly described:

Case 1 & 5: Spot market: The high degree of competition, due to low asset specificity, in combination with a low degree of non-separability, i.e. the outcome can easily be traced back to the agent's commitment, makes the market price mechanism the most effective choice independent of the degree of task programmability (Mahoney, 1992, p. 575). In this case, the company should opt for 'buy' instead of 'make' in both cases.

Case 2 & 6: The high degree of asset specificity requires both parties to engage in long-term relationships, as high initial investments are needed (Mahoney, 1992, p. 575). As mentioned in section 2.4, hold-up problems may emerge as a result of relationship specific investments (Kale & Puranam, 2004, p. 81; Schölermann, 2003, p. 30). A joint venture can help to set up effective monitoring systems of both parties in case of high task programmability (case 6). In case 2, task programmability is low, which makes the installation of monitoring mechanisms less efficient. For this reason an outcome-based long-term contract may be appropriate (Mahoney, 1992, p. 575). This is in line with agency theory, which predicts that the less programmable a task, the more appropriate are outcome-based contract (Eisenhardt, 1989, p. 62). Thus, case 2 opts for 'buy' (with long-term commitment); whereas case 6 requires a partial 'make' option.

Cases 3 & 7: In both cases the non-separability is high and asset specificity is low, which makes long-term contracts not appropriate. Due to the low task programmability in case 3, a relational, cooperative contract is necessary, as behavioral based controlling systems do not work (Mahoney, 1992, p. 576). For case 7, task programmability is high. As proposed by the agency model, high task programmability is positively related to behavior-based contracts, as programmable tasks can give information about the agent's behavior (Eisenhardt, 1989, p. 62). However, as the non-separability of the task is high, shirking behavior may be possible in behavior-based contracting relationships. For this reason, an inside-contracting model may be useful (Mahoney, 1992, p. 576). An inside contract means that a company hires a contractor, who produces goods inside this company at a piece-rate price. The contractor, in turn, hires and controls employees himself (Buttrick, 1952, pp. 205-206). Thus, an outcome-based contract between the contractor and buying company is established, which aligns the goals of the two parties (Eisenhardt, 1989, p. 60). For these reasons, case 3 supports the 'buy' solution, whereas case 7 supports the 'make' decision.

Cases 4 & 8: High asset specificity and high non-separability imply a high value to the company, but shirking problems without control mechanisms may be possible (Mahoney, 1992). In case 8, the task programmability is high. Case 8 needs therefore a company hierarchy, which implies a vertical integration decision, as high task programmability enables the company to install these control mechanisms (Mahoney, 1992, pp. 576-577). In case 4 the company cannot efficiently imply control mechanisms due to the low level of task programmability, but it cannot neither implement outcome-based contracts, due to the high level of non-separability (Mahoney, 1992, p. 77). As a result, Mahoney (1992, p. 77) suggests a clan structure, based on trust and solidarity. At first sight, trust and solidarity seems to be contradicting to the human assumptions of agency theory. However, agency theory acknowledges the fact that family ties are strong and serve therefore as governance mechanism, which may prevent from opportunism (Thomsen & Conyon, 2012). Therefore, a functioning clan structure can indeed serve as a valid control mechanism. For those reasons, case 8 supports a buy decision, whereas case 4 aims at developing strong bonds to the supplying company, thus a 'make' decision.

Table 1. Predicting the organizational form of vertical control Source: Mahoney (1992, p. 576)

	Low Task Programmability		High Task Programmability	
	Low Asset Specificity	High Asset Specifity	Low Asset Specificity	High Asset Specificity
Low non-separability	**1: spot market**	**2: long-term contract**	**5: spot market**	**6: joint venture**
High non-separability	**3: relational contract**	**4: clan (hierarchy)**	**7: inside contract**	**8: hierarchy**

3.1.2 Agency Theory and Sourcing Strategies: Market Complexity Requires Behavioral-Based Approaches, Market Certainty Requires the Supplier to Signal Commitment

Agency theory can be a valuable tool in order to determine the right strategy to categorize commodities. According to Eisenhardt (1989, p. 61); "Outcome uncertainty is positively related to behavior-based contracts and negatively related to outcome-based contracts." Thus, as supply risk increases and therefore the outcome uncertainty increases, behavior-based contracting seems more appropriate. This is in line with Zsidisin and Ellram (2003, p. 18), who state that behavioral-based contracts will make the supplier work towards the purchasing function's interest when a certain degree of supply risk is involved. The authors name 4 behavior-based approaches, which align the interest of the purchasing function and the supplier: Supplier certification, Quality programs, Target costing as well as Supplier Development (Zsidisin & Ellram, 2003, p. 18).

Supplier certification involves the evaluation of suppliers at prior determined performance thresholds, such as quality, price or delivery (Zsidisin & Ellram, 2003, p. 18). The behaviors which meet those criteria are often standardized, which brings the supplier behavior closer to the interest of the supply function (Zsidisin & Ellram, 2003, p. 18). Further, due to the high information exchange, it can be assumed that supplier certification reduces supplier opportunism, as information asymmetry is mitigated (Eisenhardt, 1989, p. 60). The implementation of quality management programs increases the capabilities of the supplier, which in turn will decrease the supply risk (Zsidisin & Ellram, 2003, p. 18). Further, quality management programs also help reduce information asymmetry due to frequent information exchange. Target costing involves negotiations and information exchange with the supplying company in order to support the supplier to decrease unnecessary costs (Zsidisin & Ellram, 2003, p. 18). As a last point, supplier development aims at improving the supplier's capabilities, so that supply risk can effectively be reduced in the short- and long run (Zsidisin & Ellram, 2003, p. 18). In this way, the purchasing organization develops a network of capable and reliable suppliers (Zsidisin & Ellram, 2003, p. 18).

The level of high supply risk involved in behavioral-based management implies that they converge with the two dimensions of the Kraljic matrix, which have the dimension of high market complexity. These two dimensions are as follows (Kraljic, 1983, pp. 111-112):

- strategic items (high value, high market complexity): a partnership with the supplier is appropriate
- bottleneck items (low value, high market complexity): firms should focus on assuring supply.

As can be seen, the suggestions as given by the Kraljic matrix are in line with the behavioral approach towards risk management. The assurance of critical items leads to close collaboration with the supplying company. In this way, market complexity is mitigated, leading to assured supply and reduced costs. From an agency perspective, the interests of both parties are co-aligned, which mitigates opportunism.

As a next step, the implementation of the sourcing strategy is executed through levers (Schiele et al., 2011a, pp. 319-322). A sourcing lever "is a set of measures that can improve sourcing performance in a commodity group" (Schiele, 2007, p. 279). Further, high market complexity converges with differentiation levers, comprising product optimization, supplier integration and process improvement (Schiele et al., 2011a, p. 330). This is also in line with the behavioral-based approach of agency theory, as suggested by Zsidisin and Ellram (2003). From these considerations it becomes clear that agency theory enriches the decision-making process of finding a suitable sourcing strategy in a highly complex

supply market environment, as agency theory aims at aligning the interests of both parties and reduces information asymmetries, which is needed in order to ensure supply in an uncertain environment.

The question remains whether agency theory also may be a useful tool when the complexity of a market is low. According to Kraljic (1983, pp. 111-112), the following sourcing strategies should be employed:

- leverage items (high value; low market complexity): companies should exploit their purchasing power;
- non-critical items (low value, low market complexity): efficient processing should be ensured

The leverage strategy for this kind of items would be cost-leadership focused, which entails the levers international sourcing, price evaluation and optional pooling with other business units from the same company (Schiele et al., 2011a, p. 330).

A way to find the right supplier might be found in adverse selection, as this leads to bonding costs imposed on the supplying company (Jensen & Meckling, 1976, p. 308). In this way, the supplier signals the purchasing company guarantees that he will not act against the interests of the purchasing function (Jensen & Meckling, 1976, p. 308). One way to deal with low supply risk items might be the additional demanding of stock-management, shared cost reductions and flexibility imposed on the supply side (Monczka et al., 2010, p. 62). In order to select only the most capable suppliers, breach against these requirements would be paid by the supply side through bonding costs (Jensen & Meckling, 1976, p. 308). By making an initial commitment to these contractual arrangements, the purchasing company can rely to a greater extent on the suppliers' capabilities, as he is ready to accept these bonding costs. Thus, agency theory provides the purchasing professional with practical solutions of how to design a successful sourcing and lever strategy.

3.1.3 Agency Theory and Supplier Strategies: Agency Theory Fails to Acknowledge the Competitive Advantage Through Innovative Relationships, which Presupposes Information Asymmetry

The choice of the individual supplier should not only be taken in consideration to the single supplier, but should take into account the portfolio of suppliers, which considers supply risks and returns (Wagner & Johnson, 2004, p. 179). Agency theory does not seem to support this decision-making point, as agency theory aims at aligning goals and mitigating information asymmetry. However, networks between organizations can offer a valuable source of new technological innovations (Tidd & Bessant, 2009, p. 148). Information asymmetry is a presupposition when the company aims at acquiring external knowledge. This shows the contradiction between agency theory, which tries to reduce information in order to establish the most efficient contract, and the open innovation paradigm, in which companies actively search for companies with highly diverging knowledge and goals in order to engage in fruitful relationships (Tidd & Bessant, 2009, pp. 255-256). Thus, from these considerations it seems highly unlikely that agency theory can be a supportive tool for this decision point. Further, it is neither assumable that agency theory can help to determine the right relationship with a specific supplier. Agency theory only determines the contractual relationships, with the aim at establishing the most efficient contracts. However, when determining a relationship, factors such as the strategic value of the product or service in question or the capabilities of the supplier play a crucial role in determining the intensity of the buyer-supplier collaboration (Bensaou, 1999, p. 43). Further, Schiele et al. (2011b, pp. 16-17) outline the benefits of a buying company to be a preferred customer of the supplier. It is highly questionable that relationships, based on mistrust and the introduction of checks-and-balance system will drive an innovative partnership.

3.1.4 Agency Theory and Contract Awarding: Agency Theory Offers a Framework, which Allows to Distinguish Between Behavior-Based and Outcome-Based Contract Awarding

As agency theory helps align the interest of the principal and agent inside a contractual relationship, the choice of the most efficient contract can be supported by agency theory. The choice of the right contractual type is dependent on several aspects:

Fixed-price contracts are appropriate in stable markets, but inappropriate in unstable markets, where commodity costs fluctuate (Monczka et al., 2010, p. 336). This is in line with Eisenhardt (1989, p. 61), who states that "Outcome uncertainty is positively related to behavior-based contracts and negatively related to outcome-based contracts." Thus, the behavioral approaches by Zsidisin and Ellram (2003) as described in section 3.1.2 might be useful when engaging in fixed-price contracting under conditions of uncertainty. Further, Monczka et al. (2010, p. 336) state that the longer the duration of a contract, the less likely a supplier is to engage in fixed price contracts. This stands in contrast to agency theory, as Eisenhardt (1989, p. 63) states that the duration of an agency relationship "is positively related to behavior-based contracts and negatively related to outcome-based contracts." The reason may be found in the fact that the information asymmetry decreases in long-lasting relationships (Eisenhardt, 1989). Further, as already mentioned in section 4, the following factors favor fixes-price contracts over outcome-based contracts: information systems are positively related to behavior-based contracts (Eisenhardt, 1989, p. 61). The measurability of the outcome is negatively related to fixed-price contracts (Eisenhardt, 1989, p. 62). In addition, if a task is programmable in advance, i.e. the tasks are clearly defined, a behavior-based contract is more appropriate than an outcome-based contract, as programmed job routines reveal the behavior of the agent (Eisenhardt, 1989, p. 62).

Outcome-based contracts align the interest of the principal and the agent (Eisenhardt, 1989, p. 60). They are efficient in a certain world, where all future contingencies are predictable (Hendry, 2002, pp. 98-99). Thus, in an unpredictable world, where the outcome of the agent's work is not only dependent on his behavior, but on unforeseeable factors, behavioral-based (fixed-price) contracts are more appropriate (Hendry, 2002, p. 99). For this reason, outcome-based contracts are likely not to be accepted by a risk-averse agent in times of market uncertainty. The only way to implement outcome-based contracts in unstable environments, according to agency theory, would mean to pay the agent an extra fee to compensate him for his risk (Hendry, 2002, p. 99). This risk compensation, however, would not be acceptable to the principal, as he is assumed to be risk neutral and as a result, the additional risk fees paid to the agent would be bigger than his own benefit in risk reduction (Hendry, 2002, p. 99).

Table 2. The contribution of agency theory to the decision-making process of supply management

	Decision Points			
	Make-or-Buy	**Selecting specific sourcing strategies for each commodity**	**Selecting supplier strategies and making supplier portfolio decisions**	**Awarding contracts after negotiating with suppliers and taking the supplier strategies into account**
Agency Theory as supportive framework to make a decision	**Agency Theory and Transaction Cost Economics combined provide framework: The decision is dependent on the variables 'task programmability', 'non-separability' as well as 'asset specifity'.**	**Agency theories provides framework: High market complexity requires behavioural-based approaches (supplier certification, quality management programs, target costing, supplier development). Low market complexity requires the supplier to engage in signalling.**	**Agency theory does not offer a framework as information asymmetry is regarded as disadvantage. However, in order to increase innovative capabilities, suppliers with different goals and knowledge are crucial.**	**Agency theory offers a framework: Depending on the variables 'outcome uncertainty', 'information systems', 'outcome measurability' and 'task programmability', the parties engage either in behaviour-based or outcome-based contracts. Further, the different perceptions of risk have to be taken into account.**

Further, a lack of information systems is favors outcome-based contracts, as the behavior of the agent is not observable (Eisenhardt, 1989, p. 61). The measurability of the outcome is positively related to outcome-based contracts (Eisenhardt, 1989, p. 62). As a last point, task programmability is negatively related to outcome-based contract, as low task programmability implies that the right behavior cannot be agreed on when creating a contract (Eisenhardt, 1989, p. 62).

Next to purely outcome or behavioral-based contract, there are is whole range of different contracts, which implies different level of risk for each party. Eisenhardt (1989, p. 62) made the propositions that the risk aversion of the agent is positively related to behavior-based contracts (and vice versa), whereas the risk aversion of the principal is positively related to outcome-based contracts (and vice versa). However, it has to be mentioned that these proposition are not backed by a lot of empirical evidence (Eisenhardt, 1989, p. 62). Thus, under these circumstances, only compromises on both sides are possible in order to determine the most appropriate contractual choice. Possible contractual choices, which share the risk between both parties, can therefore be found in fixed-price with incentive contracts, cost plus incentive fee as well as cost sharing contracts.

4. AGENCY THEORY AS SUPPORT TO DECISION-MAKING IN PURCHASING AND THE NECESSITY TO REACH AN ENLIGHTENED SOURCING DECISION

This thesis aimed at evaluating the practical contributions of agency theory to supply management. As the outcomes confirm, agency theory can be a valuable ingredient of the toolbox of a purchasing professional.

The results show that agency theory contributes fully to the establishment of a sourcing strategy, as it encompasses the degree of market uncertainty and offers behavioral- as well as outcome-based contractual mechanisms in order to assure supply. It further helps the purchasing professional to create the most efficient contractual relationship in the last critical decision-point faced by supply management (contract awarding). Further, agency theory, in combination with transaction cost economics, offers a supporting framework to make-or-buy decisions. Agency theory seems not to be useful in establishing a supplier-relation strategy, due to its aim to reduce information asymmetries, which are perceived as competitive advantage by other theories. Thus, the notion of Eisenhardt (1989, p. 72) that the theory "provides a unique, realistic, and empirically testable perspective on problems of cooperative efforts", seems also to be true when applying it to the decision-making process of supply management. Table 2 outlines the findings of the thesis.

It has to be mentioned, however, that agency theory makes unrealistic assumptions about human beings. It is questionable whether the assumptions about humans as homo economics really apply to human nature. In contrast, Theory Y perceives humans as intrinsically self-motivated, which in turn leads to motivational instead of control mechanisms (Mc Gregor, 1966, p. 11). Thus, there are most likely numerous different ways to align interests of the principal and the agent beside control and contractual mechanisms. A further limitation of the thesis is the research method employed. Because of the method of a literature review, it was possible to summarize the most important decision points of supply management, to describe agency theory in detail and to apply the theoretical foundation of agency theory on the decision-making process of supply management. In order to confirm the practical value of agency theory, empirical evidence is needed. For this reason future research should be conducted in relation to agency theory and the decision points of supply management. Further, the thesis focuses on agency theory in isolation to other approaches, but as the findings confirmed, the complementary character of agency theory and transaction cost economics offer a valuable purchasing tool. For this reason future research should be conducted in relation to other contractual and non-contractual theories regarding supply management. For instance, even though the gap between agency theory and the capability perspective of a company seems reasonably high, the complementary value of these theories is worth to consider, as the capabilities perspective emphasizes the competitive advantage through knowledge heterogeneity in innovation projects, whereas agency theory may add value in terms of IP protection and incentive alignment. The combination of several theories, in order to employ their contemporary value and to mitigate their limitations, will enable the purchaser to conduct "enlightened sourcing decisions" (Shook et al., 2009, p. 9).

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