Industrial Marketing Management 56 (2016) 14–23

Contents lists available at ScienceDirect

Industrial Marketing Management

Provider and relational determinants of customer solution performance

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ARTICLE INFO

Article history:
Received 7 July 2014
Received in revised form 27 April 2015
Accepted 11 February 2016
Available online 22 March 2016

Keywords:
Value co-creation
Customer solutions
Service-centered logic

ABSTRACT

Given the increased use of business-to-business customer solutions, it is important to understand what factors may influence solution performance. Although the literature has addressed a wide number of areas related to customer solutions, there is limited knowledge on the specific issue of customer solution performance. This study contributes to the emerging value co-creation literature by investigating the influence of solution provider determinants and relational interactions between the provider and client on customer solution performance. The findings from an empirical study of a sample of high-tech companies in China reveal that the provider's adaptiveness, customer emphasis, and cross-functional coordination are positively related to customer solution performance. In addition, relational interactions of joint problem solving and conflict management play a positive role in enhancing solution performance. These findings offer important theoretical and managerial implications for the management of customer solutions.

1. Introduction

In recent years, the service-dominant logic of marketing has evolved from the traditional product-centric view (Grönroos, 2011; Payne, Storbacka, & Frow, 2008; Vargo & Lusch, 2004). The service-dominant view suggests that value is co-created by the service provider and the client working in a collaborative process (Grönroos & Voima, 2013; Lusch, Vargo, & O'Brien, 2007; Paulin & Ferguson, 2010; Payne et al., 2008). The value co-creation process involves collaborating firms developing solutions to meet specific client needs (Möller & Rajala, 2007; Parida, Sjödin, Wincent, & Kohtamäki, 2014). Consistent with the theoretical development of the service-centered view, many companies and industries have recognized the need to advance from providing individual goods and services to developing customer solutions (Epp & Price, 2011; Helander & Möller, 2008; Kohtamäki, Partanen, & Möller, 2013).

Customer solutions represent customized and integrated combinations of goods and services that meet client needs (Davies, Brady, & Hobday, 2006; Helander & Möller, 2008; Sawhney, 2006; Tuli, Kohli, & Bharadwaj, 2007). A customer solution provider typically develops services to design, integrate, operate, and finance products or systems across their life cycles (Davies et al., 2006; Helander & Möller, 2008). This process has become prevalent in virtually every industry as a means of competitors differentiating themselves from one another (Payne et al., 2008; Tuli et al., 2007). Customer solutions have been widely used in utilities, telecommunications, imaging, transportation, and biotechnology industries in business-to-business and business-to-consumer markets (cf. *Energy Weekly News*, 2012; *Manufacturing Close-Up*, 2011; *Journal of Transportation*, 2010; *Biotech Business*, 2007). Many companies such as IBM, General Electric, Hewlett Packard, Rolls-Royce, Ericsson and EDS all compete by selling integrated customer solutions (Davies et al., 2006). Although customer solutions have been widely embraced, many organizations have only seen marginal returns or have failed to develop successful solutions that meet client expectations (Epp & Price, 2011). Some providers have even lost money providing solutions (Tuli et al., 2007). If the solution provider cannot manage the opportunities and challenges properly, it may even result in a "service paradox" with a declined overall firm performance (Kastalli & Van Looy, 2013).

Anecdotal evidence has underscored the importance of customer solutions, however, theoretical and empirical studies that explicitly articulate the value co-creation process and the determinants of customer solution performance are surprisingly scarce in the marketing literature (Payne et al., 2008; Tuli et al., 2007). The emerging value co-creation literature recognizes the critical role of processes within the context of service-dominant logic, including the "supplier value-creating processes," the "customer value-creating processes", and the "encounter processes" (Payne et al., 2008, p. 85). This process-based framework provides an effective theoretical lens to study customer solutions. Within the supplier value-creating process, the supplier uses its resources and skills to manage the design, production, and delivery of customer solutions and its relationship with the client. Within the customer value-creating processes, the customer contributes to value-co-creation through the usage of its own resources and knowledge (Grönroos & Voima, 2013; Ordanini & Pasini, 2008). The encounter

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http://dx.doi.org/10.1016/j.indmarman.2016.03.006
0019-8501/

process involves a series of longitudinal and dynamic relational interactions between the solution provider and the customer (Payne et al., 2008). According to this process-based perspective, customer solution performance is mainly determined by the provider, the client, and their collaborative interactions (Grönroos & Voima, 2013; Payne et al., 2008; Tuli et al., 2007). Besides the theoretical development and advocacy of this process-based perspective of value co-creation, there are very limited theoretical and empirical studies investigating the effectiveness of customer solutions and their determinants from the supplier, the client, and the relational interaction process (Grönroos & Voima, 2013; Sawhney, 2006; Tuli et al., 2007). This paper extends the value co-creation research stream by investigating the impact of solution provider determinants and relational interactions on customer solution performance within the process-based framework (Payne et al., 2008; Tuli et al., 2007).

This study is based on a sample of 238 high-technology enterprises in China that are actively engaged in value co-creation for industrial buyers, such as providing system integration and developing new products for clients. The use of China-based companies for this research is particularly significant as China now is the largest emerging economy in the world, and understanding corporate behaviors in emerging economies is pivotal for marketers in this new era (Sheth, 2011). The existing studies about customer solutions and value co-creation are primarily conducted in the developed economies, including the U.S. and Europe. Since the research context can serve as an important determinant of the focal outcome variables or moderate the hypothesized relationships (Johns, 2006; Zahra, 2007), it is important to extend the existing research about value co-creation to a new research setting (Johns, 2006). In addition, Chinese companies have a long tradition of using relational processes to govern business relationships (Sheng, Zhou, & Li, 2011). This provides a logical and robust setting to examine the impact of the provider and encounter processes on customer solution performance.

This research makes two essential contributions to the literature. First, it furthers the stream of research on the service-centered view of value co-creation. Although marketing scholars and business practitioners highlight the importance of value co-creation (Epp & Price, 2011; Grönroos, 2011), there is limited research investigating the performance outcomes of value co-creation customer solutions. Secondly, the research addresses calls in the literature to examine how customer solution performance may be influenced and enhanced by provider-determinants and the interactions between the provider and the client (Payne et al., 2008; Sawhney, 2006; Tuli et al., 2007).

2. Conceptual framework and hypotheses

2.1. The service-centered view of customer solutions

Customer solutions can create a number of significant competitive advantages for companies. They can help companies avoid direct price competition (Sharma & Iyer, 2011), compete against commoditized products (Kastalli & Van Looy, 2013), and provide higher sales revenue and profit margins to the solution provider due to an enlarged product and service portfolio (Sawhney, 2006). Customer solutions can address client needs precisely and effectively (Wise & Baumgartner, 1999) and build competitive differentiation by integrating expertise, resources, and networks of the provider and the client (Lovelock & Gummesson, 2004). Although the traditional view of customer solutions has been that of an integrated combination of goods and services to meet client needs (Davies et al., 2006; Sawhney, 2006; Sharma & Iyer, 2011), a process-based perspective provides a useful approach in understanding the determinants of customer solutions within the context of service-dominant logic (Payne et al., 2008).

The process of value co-creation starts from an understanding of the customer's needs and wants (Payne et al., 2008; Tuli et al., 2007). In a synthesis of the literature, Tuli et al. (2007) postulate that customer solutions are a combination of goods and services that are selected and designed/modified to address business clients' needs and requirements. These requirements, seen from the client side, underscore the importance of the provider's customer-oriented processes (Payne et al., 2008). According to the service-centered view, market value is co-created by the interactions between the provider and the client taking place through the relational process (Tuli et al., 2007; Vargo & Lusch, 2004). A closer examination of the determinants of solution performance from the provider side is thus warranted.

The service-centered view of customer solutions has evolved to emphasize the interactions between the service provider and the client which are aimed at meeting the needs of and creating value for the client (Grönroos & Voima, 2013; Payne et al., 2008; Töllner, Blut, & Holzmüller, 2011). The interactions between the provider and the client are often multidimensional (Helander & Möller, 2008; Cannon & Homburg, 2001). Customer solution providers have shifted their role from a product supplier to a business provider which builds a long-term relationship with the client (Helander & Möller, 2008). The collaboration and cooperation between the service provider and the client is instrumental to the value co-creation of customer solutions (Paulin & Ferguson, 2010). The solution provider and client thus share resources, technologies, knowledge, and capabilities through this relationship to improve the solution performance (Ordanini & Pasini, 2008; Payne et al., 2008). In addition, the collaboration and cooperation between participating companies may help define the perception of an effective customer solution through client-perceived value (Cannon & Homburg, 2001; Paulin, Ferguson, & Payaud, 2000).

2.2. Solution provider determinants

The first variables that are examined in their relationship to customer solution performance are customer-centric solution provider determinants (Vargo & Lusch, 2004). The service provider has to collaborate with and learn from its customers by adapting to their ever-changing needs. The efficiency of adaptation and collaboration hinges on the service provider's internal customer-centric orientation in three dimensions. The service provider needs to be readily capable of initiating changes in its own marketing and technology capability to fit with the client's requirements. In order to adapt to the customer, the service provider needs to closely monitor, listen, and appreciate the client's dynamic needs. This can be achieved only if the service provider has a customer-emphasis culture, and develops the solution from the client's perspective (Helander & Möller, 2008; Grönroos & Voima, 2013). In addition, the service-centered view of customer solution implies that the service provider's goal is to customize offerings by maximizing the customer's involvement and input. The cross-functional, intraorganizational boundary spanning enables companies to integrate their customers' dynamic marketing and technology needs. Coordination across different units/departments remains a key challenge for customer solution provider (Payne et al., 2008; Tuli et al., 2007). Overall, this study considers three dimensions of the customer-centric culture: adaptiveness, customer emphasis, and cross-functional coordination.

Adaptiveness refers to the provider's ability to understand and react to the client's requirements. The purpose of a solution is to address a client's business needs, which are usually idiosyncratic and dynamic (Vargo & Lusch, 2004). As a result, customer solution providers must make strategic choices concerning initiatives they will undertake using their organizational capabilities to achieve alignment between customer needs and its offerings (Helander & Möller, 2008). These choices can involve the development of novel responses to environmental demands or copying successful responses from other organizations (Abrahamson, 1991), both of which depend on a company's adaptive capability. Adaptive capability has two related but different aspects: the commitment to monitor the environment, and to reconfigure internal resources in response to a changing environment

(Vakratsas & Ma, 2009). These capabilities enable a solution provider to accurately identify customer requirements and modify its offerings to fulfill them.

Provider adaptiveness exists as a "sense-and-respond" strategy that modifies a product and service offering in order to address the client's requirements in a cyclical manner (Day, 1999). The solution provider's adaptive capability may enable it to modify the solution offerings to fulfill the client's dynamic requirements in the process of using the product and service. As a result, the provider's adaptiveness reduces the client's operations cost (Cannon & Homburg, 2001), thus creating value and improving customer solution performance. The provider's adaptiveness can also enable it to design and develop procedures and behaviors which are compatible to the client's behavior patterns. This behavior pattern similarity may increase the chance to create successful customer solution (van der Valk & Wynstra, 2012). Given that adaptiveness represents a positive customer solution element, it is hypothesized that:

H_1. Provider adaptiveness is positively related to customer solution performance.

Customer emphasis refers to the extent to which the solution provider satisfies the client through continuous needs assessments during the ongoing interaction process (Nwokah, 2008; Payne et al., 2008; Tuli et al., 2007). It reflects the provider's ability to understand client needs and to create value through customized products and services (Hakala & Kohtamäki, 2010). Customer emphasis can improve solution performance for several reasons. First, customer emphasis can help the provider constantly identify opportunities to fulfill client needs. Creating value for the client begins with an understanding of the customer's needs and requirements (Payne et al., 2008). It requires the solution provider to look at the solution from the client's perspectives (Helander & Möller, 2008). Customer emphasis enables the provider to constantly assess the changes in customer preferences and requirements, which provide opportunities to improve customer solution performance (Payne et al., 2008).

Customer emphasis has a positive impact on a company's relational capabilities (Smirnova, Naudé, Henneberg, Mouzas, & Kouchtch, 2011), which facilitate the provider's management of the relational interactions of a customer solution. The service-centered view of marketing implies a shift in marketing thought and practice from market transactions to relationships. Recognizing the importance of relationships, customer emphasis inspires the service provider to collaborate with its client and develop offerings to fulfill client needs at all stages of customer solutions (Matthing, Saden, & Edvardsson, 2004). Overall, a customer emphasis increases the customer's perceived quality of and satisfaction with the products and services offered by the solution provider (Helander & Möller, 2008). Therefore, it is hypothesized that:

H_2. Customer emphasis by the provider is positively related to customer solution performance.

Cross-functional coordination represents the degree to which different functional units within the solution provider interact, communicate, and coordinate with one another (Jaworski & Kohli, 1993; Narver & Slater, 1990). Cross-functional coordinate plays a critical role in different stages of customer solutions as it achieves alignment between the functions which identify client needs and the functions which deliver the solution (Payne et al., 2008). At the requirements definition stage, the solution provider has to identify and understand the client's recognized and unrecognized needs (Payne et al., 2008; Tuli et al., 2007). This requires integrated knowledge from both the client and the external environment. Cross-functional coordination is a key knowledge integration mechanism (Gatignon & Xuereb, 1997; Grant, 1996) and it enables companies to synthesize, integrate, and apply external knowledge (Henderson & Cockburn, 1994).

Cross-functional coordination is critical in new product development (Atuahene-Gima, 2005), which is an integral element of many customer solutions (Tuli et al., 2007). Moreover, customer solutions usually involve different units in the provider company (Payne et al., 2008). For instance, the sales and marketing unit may be mainly responsible for requirements definition; R&D or development department can be the primary unit working on customization and integration; and post deployment support is generally provided by the after sales support unit. As a customer solution is an ongoing relational process involving all the aforementioned activities, coordination across all the different units is critical to ensure superior performance. It is therefore hypothesized that coordination across independent units is a key determinant of customer solution performance:

H_3. Cross-functional coordination is positively related to customer solution performance.

2.3. The influence of relational interactions

This study specifically examines three dimensions of relational interactions which may be related to value co-creation in a customer solution. The service-centered view of marketing indicates that solution providers need to manage the relational interactions that involve clients in developing value creation strategies and programs to meet specific client needs (Payne et al., 2008). The encounter processes involve intensive interactions between the solution provider and the client (Payne et al., 2008). This inter-organizational collaboration is central to the development of customer solutions and has been found to be positively related to exchange performance (Paulin & Ferguson, 2010) and thus value co-creation (Ordanini & Pasini, 2008; Payne et al., 2008). The service-centered view perceives customer solutions as a continuous learning process for both the provider and the client (Grönroos & Voima, 2013; Tuli et al., 2007). A key determinant of the efficiency of learning is the extent to which the parties can share their proprietary information and develop shared points of view by interfirm communication (Payne et al., 2008; Tuli et al., 2007).

A key difference between the service-centered view and goods-centered view of customer solutions is that the former emphasizes the customer's role as a value co-producer (Ordanini & Pasini, 2008; Vargo & Lusch, 2004), whereas the latter views the customer as a passive receiver of value (Grönroos & Voima, 2013). Accordingly, the customer is involved in joint problem solving at all stages of value co-creation (Payne et al., 2008; Tuli et al., 2007). If the customer does not participate into activities of customer solution design and production, value co-creation cannot take place (Grönroos & Voima, 2013). On the other hand, the key to successful value co-creation is to mobilize the customer in the value coproduction process (Normann & Ramirez, 1993; Ordanini & Pasini, 2008), which can be achieved through joint-problem solving. However, industrial marketing relationships often suffer from inescapable conflict (Jap & Anderson, 2003), and the effect of conflict overshadows the cumulative effects of cooperative interorganizational behaviors (Palmatier, Dant, Grewal, & Evans, 2006). Therefore, reducing or resolving ongoing conflict is a pivotal task as the quality of the interactions is crucial for customer value co-creation (Grönroos & Voima, 2013). It should be noted though that there can be positive aspects to conflict, however, this is outside the domain of this research. Therefore, this study specifically examines three dimensions of the interactions between the solution provider and the client: information sharing, joint problem solving, and conflict management.

Information sharing refers to the extent to which each party discloses information that may facilitate the other party's activities (Heide & Miner, 1992). It involves exchanging and disseminating knowledge through interpersonal interactions within and between organizations (Kale & Singh, 2007; Ordanini & Pasini, 2008). The transfer

of knowledge is considered the most important but most challenging knowledge activity (Schleimer & Riege, 2009). The ability to manage a task rests upon the company's ability to share knowledge associated with managing or executing that task with all relevant parts within the organization or between collaborating parties (Grant, 1996). According to the service-centered view of marketing, the primary flow in service provisions is information (Vargo & Lusch, 2004). Information sharing can be seen as a precondition for problem solving (McEvily & Marcus, 2005), thus making it a critical component of efforts to achieve a successful customer solution.

The service-centered view of customer solutions emphasizes the importance of the value-creating processes that involve the client as a value co-creator (Payne et al., 2008; Tuli et al., 2007). The provider must be aware of changes in the environment and the client. Clients are, however, frequently unclear about or cannot fully articulate their business needs. They desire that providers proactively understand and address their needs as part of an ongoing relationship (Blocker, Flint, Myers, & Slater, 2011). Information sharing between the provider and client can help the provider fully identify and delineate the client's needs at the requirement definition stage. It is also important for the client to share information about its political landscape and the operations with the provider to facilitate modification or implication of the solution at the post-deployment stage (Tuli et al., 2007). Therefore, information sharing enhances the capabilities of the companies involved and can motivate employees to engage in behaviors that improve organizational performance (Prince, Katz, & Kabst, 2011). Information sharing between the two parties thus helps companies build their cooperative skills and thereby manage the ongoing relationship more successfully (Kale & Singh, 2007).

The client is an active value co-creator within the solution development process (Grönroos & Voima, 2013). The client must release its existing knowledge and information to the solution provider; that is the only way the latter can maximize the benefits it can provide with a customer solution (Ordanini & Pasini, 2008). On the other hand, there might be a knowledge gap between the solution provider and the client, as the former usually has greater knowledge on the technologies on which the solution is based on (Helander & Möller, 2008). Information sharing between the provider and the client enables the client to adjust and improve its operational procedures, which will lower its operational cost of a solution (Cannon & Homburg, 2001). Overall, it is hypothesized that:

H_4. Information sharing between the provider and the client is positively related to customer solution performance.

Joint problem solving is defined as the degree to which parties to an exchange share responsibilities for maintaining the relationship and to address problems that arise (Heide & Miner, 1992). Joint problem solving may improve customer solution performance by enhancing mutual learning and nurturing interorganizational cooperation between the solution provider and the client. Joint problem solving greatly enhances the learning that occurs in exchange relationships because, rather than exiting the relationship when a problem occurs, the parties work through the difficulty (McEvily & Marcus, 2005). The service-centered view of marketing postulates customer solutions as an interactive learning process between the provider and the client (Grönroos & Voima, 2013; Tuli et al., 2007). Joint problem solving plays a prominent role in capability acquisition by promoting the transfer of complex knowledge (McEvily & Marcus, 2005). During joint problem solving exchange partners develop relationship-specific heuristics and specialized language for conveying complex knowledge (Hansen, 1999), which can improve communication efficiency in customer solution development. Therefore, both the solution provider and the client can build complex skills and difficult-to-codify knowledge, which will help them engage in experimentation, observation, and search for solutions (McEvily & Marcus, 2005).

A service-centered solution is usually developed through a relational process which is characterized by mutual commitment and interorganizational coordination and no value co-creation can take place if the solution provider and the client's operations are closed to each other (Grönroos & Voima, 2013). As part of the problem solving process the client must also participate in the co-design of the solution and co-creation of the core values (Payne et al., 2008). The client becomes in effect a co-producer as they cooperate with the provider to customize the solution (Normann & Ramirez, 1993; Ordanini & Pasini, 2008). Therefore, the provider needs to maximize client involvement in the customization process to better fit the needs and requirements of the client. As joint problem solving is instrumental for the provider and client to develop effective solutions, it is hypothesized that:

H_5. Joint problem solving between the provider and the client is positively related to customer solution performance.

Conflict management refers to the service-centered view of customer solutions which implies that the service provider and the client need to cooperate closely with each other to co-create value and build competitive advantage (Paulin & Ferguson, 2010). There are inherent complexities and dependencies involved in the process of developing effective customer solutions (Kale, Singh, & Perlmutter, 2000). During this relational interaction process, conflict inevitably occurs as each party strives to achieve its own general business goals (Samaha, Palmatier, & Dant, 2011). Due to potential opportunism, goal divergence, interest incompatibility, and cultural differences, conflict may occur during all stages of customer solution development. For instance, in the design and customization stage, the client may require extensive modifications, which may increase the provider's customization cost and potentially lead to conflict between the provider and the client. Given that some conflict is inevitable it is important to manage it to minimize any negative effect and improve the provider-client relationship (Borys & Jemison, 1989).

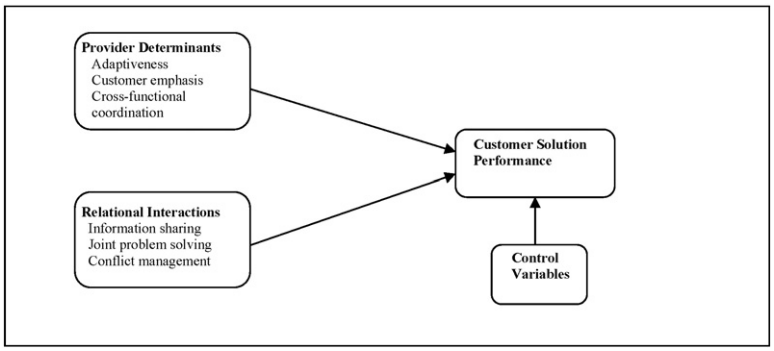

Fig. 1. Research framework.

In addition, customer solution development is a value co-creation process in which the customer functions as a co-producer (Grönroos & Voima, 2013). This implies that the customer may involve or intervene in the specific operations of the service provider. However, the provider may perceive the customer's intensive involvement or intervention as intrusive and lead to psychological reactance, and ultimately result in the provider's defensive attitude and actions (Heide, Wathne, & Rokkan, 2007). Conflict can then arise and jeopardize the customer's willingness to participate in the co-production process. Efforts to manage and minimize conflict in this situation can therefore significantly improve customer solution performance. First, an integrative conflict management process can cultivate trust and commitment between the provider and the client (Kale et al., 2000), which will offset the psychological reactance emanated from a customer's intervention. Second, an integrative conflict management mechanism can engage the provider and the client to monitor their interactions proactively so as to detect potential conflicts early. As a result, the two parties can resolve problems on a timely basis and prevent further adverse impact. Thirdly, effective conflict management mechanism fosters mutual communication between the two parties, which will also improve the efficiency of cooperation in the co-production process. Overall, it is therefore hypothesized that:

H_6. Conflict management between the provider and the client is positively related to customer solution performance.

The research framework is seen in Fig. 1 that indicates the hypothesized relationships between solution provider determinants, relational interactions, and customer solution performance.

3. Research method

3.1. Sample and data collection procedures

The empirical setting of this research consisted of high-technology companies in China. China is now the second largest economy in the world, therefore understanding corporate behaviors in China represents a challenging and promising direction for marketers (Sheth, 2011). High-technology companies were specifically selected as the sample because their prevailing business model is shifting away from product production and technology management to providing customer solutions, as exemplified by IBM, Dell, and HP (Davies & Brady, 2000; Davies et al., 2006).

Following Gerbing and Anderson's (1988) suggestions for questionnaire development, twelve in-depth field interviews were conducted with experienced firm managers to explore the practice of customer solutions in the high-technology industry. The primary goal of this kind of exploratory interview is to identify potential research issues, verify the appropriateness of the survey instrument, and seek feedback from the interviewees about the wording of the questions and design of the questionnaire. The interviews lasted about two hours on average and the informants were directors/managers of the customer solution projects. These project directors/managers were the boundary spanners between the solution provider and the client, and they are knowledgeable about all perspectives of their customer solutions (Tuli et al., 2007). As indicated by the interviews, high-tech companies are widely engaged in customer solutions, such as system integration, software development, and outsourced new product development. These in-depth interviews helped the researchers identify important and relevant issues in the customer solution development process, such as conflict and cooperation between the service provider and the client. In addition, the interviewees were asked to verify the relevance and completeness of the measures. They also helped the researchers to refine the phrasing of the measurement items. On the basis of these field interviews and an intensive literature review, the questionnaire was first created in English, then translated into Chinese and back-translated into English by independent researchers to assure conceptual equivalence. The final questionnaire that was used with the respondents was in Chinese.

In the second phase of the research a random sample of five hundred companies was drawn from a high-tech enterprise directory provided by a marketing research firm in China. In order to improve data collection quality (Hoskisson, Eden, Lau, & Wright, 2000), an interview-based survey was used as the data collection means instead of traditional paper-and-pencil mail survey. Experienced interviewers were recruited to conduct onsite interviews, a critical method to generate valid information and high-quality data in emerging economies (Hoskisson et al., 2000). The sampled companies were first called by phone to locate and make appointments with a senior executive from each company. The questionnaire was then presented to the respondents and the surveys were completed during the face-to-face interviews. By using this interview-based survey method, the researchers could answer the respondents' inquiries onsite and ensure data quality. The majority of informants from the sample firms were senior level executives, including marketing manager (25.6%), CEO (16.8%), marketing director (7.1%), project manager (6.3%), and R&D manager (5.0%), and others. On average, the informants had been working in the company focal firm for 5.48 years. Informants were asked to indicate their knowledge level in regard to the survey questions. The mean was 4.86 (out of 5), comparable to similar previous studies (Rindfleisch & Moorman, 2001).

A total of 238 usable questionnaires were obtained, which represented a response rate of 47.6%. The likelihood of non-response bias was tested by splitting the total sample into early and late respondents (Armstrong & Overton, 1977). A comparison of early and late samples by MANOVA indicates that there are no significant differences between the two groups in terms of key sample characteristics (i.e., company age, number of employees, and ownership type) (Wilks' Lambda $= 0.99$, $F = 1.15$, $p = 0.33$), suggesting that non-response bias is not a concern in this study. The sample companies have an average of 644 employees and have been established for 11 years. The sample companies represented several high-tech industries, with 18.0% in software development, 14.3% in electronics engineering, 13.4% in biomedical, and 5.4% in the telecommunication industry, and the balance were across numerous other categories of high-technology industries.

3.2. Measures

There are no existing measurement items for customer solution performance in the literature. We developed a five item scale on the theoretical basis of Tuli et al. (2007), which assessed the solution performance from multiple dimensions, such as efficiency in meeting client requirements, technical support service, and customer satisfaction. The indicators of adaptiveness were also newly developed in this study on the basis of Vargo and Lusch (2004). These indicators assessed the extent to which the solution provider understood and met the client's requirements, and cooperated with the client to provide customized solutions. We developed the measurement items for customer emphasis from the latest literature on customer solution and value co-creation (Payne et al., 2008; Tuli et al., 2007). Though customer emphasis shares some similarity with customer orientation from the market orientation literature, a new scale is needed in the customer solution domain. The measures focus on how the solution provider can create value and improve the solution performance on the basis of ongoing engagement and interaction between the provider and the client in the process of solution development (Payne et al., 2008; Tuli et al., 2007); whereas the general customer orientation mainly captures a firm's goal in creating customer satisfaction in the outcome (Narver & Slater, 1990; Hult & Ketchen, 2001). The four measurement items of cross-functional coordination were adapted from Atuahene-Gima (2005),

but the first and last items in their scale were dropped, as their first item had relatively low factor loading and their sixth item was excluded in their analysis.

Information sharing was measured on a four-item scale adapted from McEvily and Marcus (2005). Compared to McEvily and Marcus (2005), the indicators were specifically related to technique and market information related to the customer solution project. Joint problem solving was measured with a four-item scale, with the first three being adapted from McEvily and Marcus (2005), and the last one being developed specifically for the customer solution setting. Conflict management was measured on a five-item scale adapted from Kale et al. (2000); but the fifth item in their scale was dropped as it was related to joint problem solving, which was a distinct construct in the model.

It should be noted that the respondents were from the solution providers as opposed to the clients. This represents a 'self-reported' perspective on the study that is quite common in the marketing literature and has been validated as a sufficient measure of a client perspective (Atuahene-Gima & Evangelista, 2000; Oliva, Gebauer, & Brann, 2012). Nonetheless, a dyadic and client based perspective would be desirable and is discussed later under limitations of the research. The measurement items and their validity assessments are listed in Appendix A including factor loadings, composite reliability, and average variance extracted (AVE).

Provider and industry variables that may influence customer solution were controlled for in the regression. First, company size and age may determine a company's capability and resource availability in providing a customer solution to the customer. The logarithm of the number of employees was used as an indicator of company size. Age was measured as the number of years the company had been established. Company ownership type was controlled for by using a dummy, with foreign wholly owned and international joint ventures (IJV) as foreign (1), and other categories as domestic (0). In addition, four dummy variables were used to control for industry heterogeneity across electronics, software development, biomedical, and telecommunication industries. Other industries represented the baseline group.

3.3. Construct validity

Construct validity was assessed with an overall confirmatory measurement model. Each scale item loaded only on its latent construct and all latent constructs were correlated. The model fit indexes ($\chi^2_{(329)} = 660.09$, $p < 0.001$; comparative fit index [CFI] = 0.91, incremental fit index [IFI] = 0.91, root mean square error of approximation [RMSEA] = 0.07) and the factor loadings (all statistically significant at $p < 0.001$) suggested satisfactory model fit. The composite reliability of all latent constructs exceeded the 0.70 threshold, and all average variances extracted (AVE) were >0.50. The psychometric properties of the constructs are reported in Appendix A.

The discriminant validity of the latent constructs was assessed by two methods. First, as shown in Appendix A and Table 1, the AVE of each variable was much higher than the square of the correlation between that variable and all other variables in the measurement model (Fornell & Larcker, 1981). In addition, pairwise chi-square difference tests were conducted for each pair of constructs in the overall confirmatory model (Gerbing & Anderson, 1988). Discriminant validity is supported if an unconstrained model demonstrates significantly better fit than a constrained model in which the correlation between those two focal variables was set to one ($\Delta\chi 2$ significant at $p < 0.01$). All pairwise chi-square difference tests were significant. These analyses proved discriminant validity among all the variables in the study. The descriptive statistics and correlations are summarized in Table 1.

Table 1
Descriptive statistics and correlations.

	Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Solution performance		0.56**	0.51**	0.53**	0.47**	0.52**	0.54**	−0.05	0.02	0.16**	0.05	−0.01	−0.11	−0.08
2	Adaptiveness	0.57**		0.62**	0.54**	0.60**	0.46**	0.48**	−0.13*	0.01	0.04	−0.02	0.04	−0.08	−0.05
3	Customer emphasis	0.52**	0.63**		0.43**	0.52**	0.47**	0.46**	−0.16**	−0.01	0.01	−0.01	−0.04	−0.09	0.03
4	Cross-functional coordination	0.54**	0.55**	0.45**		0.39**	0.42**	0.60**	−0.15*	0.06	0.12	−0.04	0.04	−0.14	−0.12
5	Information Sharing	0.49**	0.61**	0.53**	0.41**		0.53**	0.51**	−0.10	−0.10	0.05	−0.04	−0.06	−0.09	−0.12
6	Joint problem solving	0.53**	0.48**	0.49**	0.44**	0.54**		0.39**	−0.09	−0.06	0.07	0.01	−0.05	−0.10	−0.03
7	Conflict management	0.55**	0.50**	0.48**	0.61**	0.52**	0.41**		−0.19*	−0.03	0.18	0.06	−0.01	−0.06	−0.04
8	Age	−0.02	−0.10	−0.13*	−0.12	−0.07	−0.06	−0.15*		0.21**	−0.03	0.03	−0.11	−0.03	−0.07
9	Size	0.05	0.04	0.02	0.09	−0.07	−0.03	−0.00	0.23**		0.11	0.07	−0.16**	0.01	−0.05
10	Ownership	0.19**	0.07	0.04	0.15*	0.08	0.10	0.20**	0.00	0.14*		0.05	−0.04	−0.05	−0.18
11	Industry-electronics	0.08	0.01	0.02	−0.01	−0.01	0.04	0.09	0.06	0.10	0.08		−0.23**	−0.20**	−0.13*
12	Industry-software	0.02	0.07	−0.01	0.07	−0.03	−0.02	0.02	−0.08	−0.13*	−0.01	−0.19**		−0.23**	−0.14*
13	Industry-biomedical	−0.08	−0.05	−0.06	−0.11	−0.06	−0.07	−0.03	0.00	0.04	−0.02	−0.16*	−0.19**		−0.13*
14	Industry-telecommunication	−0.05	−0.02	0.06	−0.09	−0.09	0.00	−0.01	−0.04	−0.02	−0.14*	−0.10	−0.11	−0.10	
15	Marker variable (MV)	−0.08	−0.06	−0.05	−0.14*	−0.04	0.03	−0.12	0.05	−0.06	−0.10	−0.02	0.12	0.00	−0.06
	Mean	5.30	5.27	5.39	5.33	5.01	5.33	5.03	11.10	2.30	0.24	0.14	0.18	0.13	0.05
	Std. deviation	0.76	0.89	0.97	0.84	0.79	0.87	0.89	1.20	0.52	0.43	0.35	0.39	0.34	0.23

Zero-order correlations are below the diagonal; adjusted correlations for potential common method variance are above the diagonal.
* $p < 0.05$.
** $p < 0.01$.

3.4. Common method bias

As a single informant was used from each sample company in the data collection procedure, common method variance is a potential concern. Lindell and Whitney's (2001) marker variable (MV) method was used to assess potential common method bias. In this method, a variable theoretically unrelated to at least one variable in the analysis is set as the MV, which provided a proxy for common method variance. In the assessment, this MV is a five-item variable that measures government intervention in the macro market environment (Luo, 2005; Cronbach's $\alpha = 0.82$). The lowest positive correlation between this MV and other latent constructs is 0.03, which is used to adjust the correlations among the variables. As shown in Table 1, no significant latent variable correlations became non-significant after the adjustment. Therefore, common method bias appears not to be a serious issue (Lindell & Whitney, 2001).

3.5. Results

Using ordinary least squares regression, customer solution performance was regressed on the hypothesized explanatory variables and the control variables. The results are shown in Table 2. Overall, the predictors explained the variance of the criterion variable well ($R^2 = 0.51$, $F = 17.58$, $p < 0.001$). For provider determinants, Hypothesis 1 was supported indicating that provider adaptiveness is positively related to customer solution performance ($\beta = 0.16$, $p < 0.01$). Hypothesis 2 was also supported indicating that customer emphasis is positively related to customer solution performance ($\beta = 0.10$, $p < 0.05$). Similarly, Hypothesis 3 was supported showing that cross-functional coordination is positively related to customer solution performance ($\beta = 0.12$, $p < 0.05$). Among the relational interaction variables, Hypothesis 4 was not supported indicating that information sharing between the provider and the client is not related to customer solution performance ($\beta = 0.19$, $p < 0.01$). Hypothesis 5 was supporting with a significant relationship found between joint problem solving and customer solution performance. Finally, Hypothesis 6 was supported indicating a positive relationship between conflict management and customer solution performance ($\beta = 0.17$, $p < 0.01$). There were no significant effects of the control variables on customer solution performance. The variables related to the company (size, age, ownership type) and industry type (electronics, software development, biomedical, telecommunications) did not influence the hypothesized relationships tested.

Table 2
Regression results.

	Unstandardized coefficients		Standard coefficients		
	β	Std. error	β	t	Sig.
(Constant)	1.13	0.34		3.31	0.00
Company age	0.01	0.00	0.07	1.44	0.15
Company size	0.01	0.07	0.01	0.09	0.93
Ownership	0.14	0.09	0.08	1.58	0.12
Industry_electronics	0.09	0.11	0.04	0.81	0.42
Industry_ software	0.02	0.10	0.01	0.20	0.84
Industry_ biomedical	−0.03	0.11	−0.01	−0.26	0.79
Industry_telecommunication	−0.07	0.17	−0.02	−0.44	0.66
Adaptiveness	0.16**	0.06	0.19	2.69	0.01
Customer emphasis	0.10*	0.05	0.13	1.98	0.05
Cross-functional coordination	0.12*	0.06	0.14	2.02	0.05
Information sharing	0.03	0.07	0.03	0.37	0.71
Joint problem solving	0.19**	0.05	0.22	3.60	0.00
Conflict management	0.17**	0.06	0.20	2.98	0.00

N = 238.
* $p < 0.05$.
** $p < 0.01$.

4. Discussion and conclusions

The extant literature has embraced a service-dominant view on examining value co-creation in developing customer solutions (Helander & Möller, 2008; Ordanini & Pasini, 2008; Tuli et al., 2007). The more recent studies advocate more research attention on the process of value co-creation of the provider, the customer, and the interactions between them (Payne et al., 2008). This process-based view emphasizes the joint role played by both the supplier and the customer, and their ongoing interactions (Payne et al., 2008; Grönroos & Voima, 2013). Therefore, it is critically important for the solution provider to manage its activities and interactions with the client in the value co-creation process (Grönroos & Voima, 2013). The study extends this emerging stream of research by examining provider determinants and the relational interactions that influence the performance of customer solutions. Overall, the findings support the service-centered view of customer solutions that provide the theoretical underpinning of the study. The empirical results largely confirm the conceptual model of this research with the exception of the effect of information sharing.

The emerging literature on customer solutions emphasizes the importance of supplier value-creating processes, which reflects the impact of supplier adaptiveness, customer emphasis, and cross-functional coordination (Payne et al., 2008). The study corroborates this recent perspective. The finding that adaptiveness is positively related to performance supports the notion that understanding and reacting to client's requirements is a critical element of customer solutions (Helander & Möller, 2008). Customer emphasis was found to be related to customer solution performance, indicating that a solution provider must constantly assess the client's needs during the ongoing interactions (Nwokah, 2008; Payne et al., 2008; Tuli et al., 2007). Cross-functional coordination was also found to be positively related to customer solution performance, confirming the importance of collaboration between different units in the value co-creation process (Payne et al., 2008). These findings thereby help identify the key provider determinants of customer solution performance and offer new insights to the recent advocacy of discovering the role of the provider in customer solutions (Payne et al., 2008; Tuli et al., 2007).

The value co-creation literature views customer solution performance as a function of interactions between the provider and the client (Grönroos & Voima, 2013; Tuli et al., 2007). This study extends this point of view by examining the role of three important dimensions of the interactions. The positive association between joint problem solving and customer solution performance supports the notion that the client is a value co-producer along with the provider to customize and improve the solutions (Grönroos & Voima, 2013; Normann & Ramirez, 1993). It reinforces the idea that joint problem solving promotes the transfer of knowledge between the provider and client (McEvily & Marcus, 2005). This finding confirms Grönroos and Voima's (2013) proposition that joint activities between the supplier and client are the precondition of value co-creation. Conflict management was likewise found to enhance customer solution performance. Although the possible cause of conflict or the specific process of conflict resolution was not identified in the research, the result supports the notion that conflict management has important benefits including cultivating trust and commitment between the provider and the client (Kale et al., 2000).

Interestingly, information sharing was not found to be significantly related to customer solution performance. This finding runs counter to the notion within the service-centered view that a primary element in service provision is information (Vargo & Lusch, 2004). We suspect that this is due to the potential detrimental impact of intensive

information sharing. While information sharing between the provider and the client may improve solution performance, too much internal information sharing may lead to 'collective blindness' (Nahapiet & Ghoshal, 1998) because the provider may become complacent with the client and narrow down its information search horizon beyond the focal relationship (Koka & Prescott, 2002). Such collective blindness may limit the provider's openness to external information and undermine its acquisition of broad market information necessary for the solution, and further jeopardize solution performance. It also may be that a specific aspect of information sharing is not beneficial to the industries examined, or that the cultural setting may have influenced this result.

This study also extends the research stream of collaborative buyer-seller relationship, which views the collaborative relationship as important means to drive down transaction and other costs inherent in the exchanges to improve relationship performance (Cannon & Homburg, 2001; Jap, 1999). The crucial goal of collaborative relationships is to add or create value for the transaction parties, especially the buyer firm (Cannon & Homburg, 2001). Previous studies in this stream have recognized the importance of ongoing interactions in creating value through service exchanges (van der Valk & Wynstra, 2012). The study extends this stream of research to the value co-creation process in developing customer solutions, which have become a pervasive service form in various industries. The findings corroborate the idea that collaborative relationship behaviors can effectively reduce the customer firm's costs and thus create value through the interactions (Cannon & Homburg, 2001).

4.1. Managerial implications

Several important managerial implications can be derived from this research. First, the overall purpose of the research had an important managerial objective. The findings of this study provide guidelines for solution providers on what areas to focus on to improve their customer solution performance. The empirical support of the service-centered view of customer solutions also indicates that this perspective is worthwhile for managers to understand and to implement. Specifically related to the findings of this study, a customer emphasis improves customer solution performance. Providers wishing to improve customer solution performance are suggested to further adapt their offerings to the client, such that it can understand the client's needs and promptly adjust its strategies to satisfy the client's requirements. Improved cross-functional coordination can also contribute to increased customer solution performance.

From a relational perspective the findings of this research have several implications as well. This includes the importance of joint problem solving, with an emphasis on interaction with the client in order to overcome solution difficulties and to find optimal resolutions. Managing conflict is also an important function for a provider's management to undertake. One note should also be made on a result that was not significant. Although the findings of the research suggest that information sharing is not related to customer solution performance, it would be premature to suggest that management ignore this activity.

4.2. Limitations and future research directions

This study represents an initial effort to empirically examine the determinants of customer solution performance, clearly a complex issue with limited empirical research provided thus far in the value co-creation literature. This research has several limitations which warrant further research attention. The first limitation is related to the operationalization of customer solution performance. The assessment of solution performance is made from the perspective of the provider and is intended to reflect the overall performance. It should be noted that self-reported measures of organizational performance are common in the marketing literature (Atuahene-Gima & Evangelista, 2000). These measures are sometimes necessary and can be desirable in situations where a broader perspective of performance is desired or objective measures reported by companies are not available to the researchers (Ailawadi, Dant, & Grewal, 2004). Our measure of performance was perceptual, so it might not reflect the actual level but the solution provider's subjective assessment of the performance. More importantly, customer solutions provide a range of benefits and the performance could be assessed from multiple perspectives, including relationship quality, customer satisfaction, financial return, and profit margins (Sawhney, 2006; Kastalli & Van Looy, 2013). A broader performance measure could be used to capture the objective or actual performance from either the provider or client's perspective, as has been done in related research (c.f. Ordanini & Parasuraman, 2011). It should also be kept in mind that the measurement of customer solution performance itself is in its infancy and is a complex issue that will require a great deal of future work to resolve (Wieland, Fischer, Pfitzner, & Hilbert, 2015).

Second, this study was cross sectional in nature, although understanding how provider and relational factors influence the relationship between the solution provider and client over time would be beneficial (c.f. Biggemann, Kowalkowski, Maley, & Brege, 2013; Powers & Reagan, 2007). Similarly, a fruitful avenue of research would be to examine how provider adaptiveness may lead to higher customer solution performance at different stages of a customer solution. As an example, at the requirements definition stage, an adaptive provider can effectively identify the client's current and future needs because it is responsive to the dynamic market environment. At the customization and integration stage, the client may bring up a large number of modifications to the original design. In addition, post-deployment support is a critical part of a solution, which may include providing new products and services in response to the client's evolving requirements (Tuli et al., 2007).

Third, a consideration that can be made in future research relates to the dual nature of some variables in this study. Adaptive capability has two related but different aspects that can be considered in future research. The process of monitoring the environment and that of reconfiguring internal resources in response to a changing environment can be considered separately (Vakratsas & Ma, 2009). In a similar fashion, conflict could be both constructive and destructive. The present research examined conflict resolution as a determinant of customer solution performance. Naturally, the effect of constructive conflict could be addressed in future research. In addition, customer solutions may involve offerings across multiple providers and incorporating a mix of products and services from more than one company (Epp & Price, 2011). It is unclear how the interaction between multiple solution providers may influence the relationships examined in this study and therefore should be addressed in future research.

Fourth, this study examined the impact of solution provider determinants and the relational interactions between the solution provider and the client. However, customer solution performance also depends on the client (Grönroos & Voima, 2013; Tuli et al., 2007). Research about how the client engages in value co-creation is still very scarce (Payne et al., 2008), thus additional research attention is warranted to examine the performance determinants from the client side.

Finally, this study's sample is limited to companies in China. Although China is the largest emerging economy in the world, it does have its own unique cultural and social environments, which may impact the choice and meaning of firm behaviors as well as relationships between variables studied (Johns, 2006). Therefore, caution is advised before generalizing the results of this study to other economies. Future studies can also enrich the literature of value co-creation by incorporating the unique cultural and social contexts into the complex practice of customer solutions (Zahra, 2007).

Appendix A. Measures used

Construct and source	Description	Factor loadings
Customer solution performance (Tuli et al., 2007) CR = 0.88; AVE = 0.59	• Our solutions have effectively met the customer firm's practical requirements.	0.93
	• Our solutions have effectively integrated and customized technology and product designs for the customer firm.	0.95
	• Our solutions have provided the customer firm with comprehensive technical support service.	1.0
	• The customer firm is very satisfied with our solutions.	0.92
	• The customer firm is very satisfied with our technical support service.	0.83
Adaptiveness (Vargo & Lusch, 2004) CR = 0.84; AVE = 0.64	• Our firm has made great efforts to comprehend customer firm's overall requirements of the solution.	0.87
	• Our firm has continuously modified and integrated the technique and product design according to the customer firm's requirement and feedback.	1.0
	• Our firm and the customer firm cooperate closely to customize solution for them.	0.89
Customer emphasis (Payne et al., 2008; Tuli et al., 2007) CR = 0.83; AVE = 0.63	• Our firm emphasizes spending time meeting customers and listening to their problems.	1.0
	• Our firm constantly benchmarks competitors' products and seek "best of class" solutions for the customer firm.	0.93
	• Our firm solicits customer reactions and suggestions as an essential part of the project processes.	1.0
Cross-functional coordination (Atuahene-Gima, 2005) CR = 0.83; AVE = 0.55	• Different functional units, such as marketing, R&D, and manufacturing, have maintained good communication and cooperation.	0.75
	• Top management emphasizes and promotes communication and cooperation among R&D and marketing units.	1.0
	• Different units can coordinate among each other in order to achieve the integral goals and priorities of our firm.	0.81
	• Different units of our firm such as marketing, R&D, and manufacturing can effectively share information and resources.	0.76
Information sharing (McEvily & Marcus, 2005) CR = 0.84; AVE = 0.57	• Our firm and the customer firm often exchange their opinion and understanding about the project related problems.	1.0
	• The customer firm provides us with core information in order to improve the solution development.	0.87
	• Our firm shares with the customer firm about the project related technical information and the status of progress.	0.92
	• Our firm shares with the customer firm about the market and competitor related information.	0.92
Joint problem solving (McEvily & Marcus, 2005) CR = 0.85; AVE = 0.59	• Our firm is jointly responsible with the customer firm for getting things done.	1.0
	• The customer firm works with our firm to overcome difficulties.	0.97
	• We work with the customer firm to help solve each other's problems.	0.91
	• The customer firm and our company often work together in order to find the way of resolution.	0.97
Conflict management (Kale et al., 2000) CR = 0.79; AVE = 0.56	• Our firm has built up effective mechanisms to resolve the problems our firm and the customer firm.	1.0
	• Our firm and the customer firm resolve the disagreement our firm and customers through open and thorough communication.	0.97
	• Our firm has effective mechanism monitoring the interactions between our firm and the customer firm, as such can detect potential conflicts timely.	0.71
	• Our firm has put great efforts to ensure that we and the customer firm maintain compatible relationship.	0.88
	• Top management has coordinated conflicts and resolved the customer firm's problems timely when there are arguments and discontentment between our firm and the customer firms.	0.79

Notes: All items used 7-point Likert scales (1 = "strongly disagree"; 7 = "strongly agree"). CR = composite reliability; AVE = average variance extracted.

References

Abrahamson, E. (1991). Managerial fads and fashions: The diffusion and rejection of innovations. *Academy of Management Review*, *16*(3), 586–612.

Ailawadi, K. L., Dant, R. P., & Grewal, D. (2004). The difference between perceptual and objective performance measures: An empirical analysis. *Marketing science institute working paper series, No. 04-001*.

Armstrong, J. S., & Overton, T. S. (1977). Estimating non-response bias in mail surveys. *Journal of Marketing Research*, *14*, 396–402.

Atuahene-Gima, K. (2005). Resolving the capability-rigidity paradox in new product innovation. *Journal of Marketing*, *69*(4), 61–83.

Atuahene-Gima, K., & Evangelista, F. (2000). Cross-functional influence in new product development: An exploratory study of marketing and R&D perspectives. *Management Science*, *46*(10), 1269–1284.

Biggemann, S., Kowalkowski, C., Maley, J., & Brege, S. (2013). Development and implementation of customer solutions: A study of process dynamics and market shaping. *Industrial Marketing Management*, *42*(7), 1083–1092.

Biotech Business (2007). *Novozymes opens Iowa center for ethanol/biofuel research (20(5)) , 1.*

Blocker, C., Flint, D., Myers, M., & Slater, S. (2011). Proactive customer orientation and its role for creating customer value in global markets. *Journal of the Academy of Marketing Science*, *39*(2), 216–233.

Borys, B., & Jemison, D. B. (1989). Hybrid arrangements as strategic alliances: Theoretical issues in organizational combinations. *Academy of Management Review*, *14*(2), 234–249.

Cannon, J. P., & Homburg, C. (2001). Buyers-supplier relationships and customer firm costs. *Journal of Marketing*, *65*(1), 29–43.

Davies, A., & Brady, T. (2000). Organizational capabilities and learning in complex product systems: Towards repeatable solutions. *Research Policy*, *29*, 931–953.

Davies, A., Brady, T., & Hobday, M. (2006). Charting a path toward integrated solutions. *Sloan Management Review*, *47*(3), 39–48.

Day, G. (1999). *The market driven organization: Understanding, attracting, and keeping valuable customers.* New York: NY: The Free Press.

Energy Weekly News (2012, February 3). *SDG&E unveils Energy Innovation Center in San Diego, 128.*

Epp, A. M., & Price, L. L. (2011). Designing solutions around customer network identity goals. *Journal of Marketing*, *75*, 36–54.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, *18*(1), 39–50.

Gatignon, H., & Xuereb, J. M. (1997). Strategic orientation of the firm and new product performance. *Journal of Marketing Research*, *34*(1), 77–90.

Gerbing, D. W., & Anderson, J. C. (1988). An updated paradigm for scale development incorporating unidimensionality and its assessment. *Journal of Marketing Research*, *25*(2), 186–192.

Grant, R. M. (1996). Prospering in dynamically-competitive environments: Organisational capability and knowledge integration. *Organization Science*, *7*(4), 375–387.

Grönroos, C. (2011). A service perspective on business relationships: The value creation, interaction and marketing interface. *Industrial Marketing Management*, *40*(2), 240–247.

Grönroos, C., & Voima, P. (2013). Critical service logic: Making sense of value creation and co-creation. *Journal of the Academy of Marketing Science*, *41*(2), 133–150.

Hakala, H., & Kohtamäki, M. (2010). The interplay between orientations: Entrepreneurial, technology and customer orientations in software companies. *Journal of Enterprising Culture*, *18*(3), 265.

Hansen, M. (1999). The search-transfer problem: The role of weak ties in sharing knowledge across organization subunits. *Administrative Science Quarterly*, *44*(1), 82–111.

Heide, J. B., & Miner, A. S. (1992). The shadow of the future: Effects of anticipated interaction and frequency of contact on buyer-seller cooperation. *Academy of Management Journal*, *35*(2), 265–291.

Heide, J. B., Wathne, K. H., & Rokkan, A. I. (2007). Interfirm monitoring, social contracts, and relationship outcomes. *Journal of Marketing Research*, *44*(3), 425.

Helander, A., & Möller, K. (2008). System supplier's roles from equipment supplier to performance provider. *The Journal of Business and Industrial Marketing*, *23*(8), 577–585.

Henderson, R., & Cockburn, I. (1994). Measuring competence? Exploring firm effects in pharmaceutical research. *Strategic Management Journal*, *15*(1), 63–84.

Hoskisson, R., Eden, L., Lau, C. M., & Wright, M. (2000). Strategy in emerging economies. *Academy of Management Journal*, *43*, 249–267.

Hult, G. T. M., & Ketchen, D. J. (2001). Does market orientation matter? A test of the relationship between positional advantage and performance. *Strategic Management Journal*, *22*(9), 899–906.

Jap, S. D. (1999). Pie-expansion efforts: Collaboration processes in buyer-supplier relationships. *Journal of Marketing Research*, *36*(4), 461–475.
Jap, S. D., & Anderson, E. (2003). Safeguarding interorganizational performance and continuity under ex post opportunism. *Management Science*, *49*(12), 1684–1701.
Jaworski, B. J., & Kohli, A. K. (1993). Market orientation: Antecedents and consequences. *Journal of Marketing*, *57*(3), 53–70.
Johns, G. (2006). The essential impact of context on organizational behavior. *Academy of Management Review*, *31*(2), 386–408.
Journal of Transportation (2010, Augustt). *Atlas Air Worldwide Holdings, Inc. reports strong second-quarter earnings, 51.*
Kale, P., & Singh, H. (2007). Building firm capabilities through learning: The role of the alliance learning process in alliance capability and firm-level alliance success. *Strategic Management Journal*, *28*(10), 981–1000.
Kale, P., Singh, H., & Perlmutter, H. (2000). Learning and protection of proprietary assets in strategic alliances: Building relational capital. *Strategic Management Journal*, *21*(3), 217–237.
Kastalli, I. V., & Van Looy, B. (2013). Servitization: Disentangling the impact of service business model innovation on manufacturing firm performance. *Journal of Operations Management*, *31*(4), 169–180.
Kohtamäki, M., Partanen, J., & Möller, K. (2013). Making a profit with R&D services - The critical role of relational capital. *Industrial Marketing Management*, *42*(1), 71.
Koka, B. R., & Prescott, J. E. (2002). Strategic alliances as social capital: A multidimensional view. *Strategic Management Journal*, *23*(9), 795–817.
Lindell, M. K., & Whitney, D. J. (2001). Accounting for common method variance in cross sectional research designs. *Journal of Applied Psychology*, *86*(1), 114–121.
Lovelock, C., & Gummesson, E. (2004). Whither services marketing? In search of a new paradigm and fresh perspectives. *Journal of Service Research*, *7*, 20–41.
Luo, Y. (2005). Transactional characteristics, institutional environment and joint venture contracts. *Journal of International Business Studies*, *36*(2), 209–230.
Lusch, R. F., Vargo, S. L., & O'Brien, M. (2007). Competing through service: Insights from service-dominant logic. *Journal of Retailing*, *83*(1), 5–18.
Manufacturing Close – Up (2011, June 11). *Abbyy USA and Fujitsu partner to deliver content management solutions to Ingram Micro Resellers.*
Matthing, J., Saden, B., & Edvardsson, B. (2004). New service development: Learning from and with customers. *International Journal of Service Industry Management*, *15*(3), 479–498.
McEvily, B., & Marcus, A. (2005). Embedded ties and the acquisition of competitive capabilities. *Strategic Management Journal*, *26*(11), 1033–1055.
Möller, K., & Rajala, A. (2007). Rise of strategic nets - New modes of value creation. *Industrial Marketing Management*, *36*(7), 895.
Nahapiet, J., & Ghoshal, S. (1998). Social capital, intellectual capital, and the organizational advantage. *Academy of Management Review*, *23*(2), 242–266.
Narver, J. C., & Slater, S. F. (1990). The effects of a market orientation on business profitability. *Journal of Marketing*, *54*(4), 20–35.
Normann, R., & Ramirez, R. (1993). From value chain to value constellation: Designing interactive strategy. *Harvard Business Review*, *71*(4), 65–77.
Nwokah, N. G. (2008). Strategic market orientation and business performance: The study of food and beverages organization in Nigeria. *European Journal of Marketing*, *42*(3/4), 279–286.
Oliva, R., Gebauer, H., & Brann, J. M. (2012). Separate or integrate? Assessing the impact of separation between product and service business on service performance in product manufacturing firms. *Journal of Business to Business Marketing*, *19*(4), 309.
Ordanini, A., & Parasuraman, A. (2011). Service innovation viewed through a service-dominant logic lens: A conceptual framework and empirical analysis. *Journal of Service Research*, *14*(1), 3–23.
Ordanini, A., & Pasini, P. (2008). Service co-production and value co-creation: The case for a service-oriented architecture (SOA). *European Management Journal*, *26*(5), 289.
Palmatier, R. W., Dant, R. P., Grewal, D., & Evans, K. R. (2006). Factors influencing the effectiveness of relationship marketing: A meta-analysis. *Journal of Marketing*, *70*(4), 136–153.
Parida, V., Sjödin, D. R., Wincent, J., & Kohtamäki, M. (2014). Mastering the transition to product-service provision: Insights into business models, learning activities, and capabilities. *Research Technology Management*, *57*(3), 44–52.
Paulin, M., & Ferguson, R. J. (2010). Relational norms in interfirm exchanges: From transactional cost economics to the service-dominant logic. *Journal of Business to Business Marketing*, *17*(4), 365.
Paulin, M., Ferguson, R. J., & Payaud, M. (2000). Business effectiveness and professional service personnel relational or transactional managers? *European Journal of Marketing*, *34*(3), 453–471.
Payne, A. F., Storbacka, K., & Frow, P. (2008). Managing the co-creation of value. *Journal of the Academy of Marketing Science*, *36*(1), 83–96.
Powers, T. L., & Reagan, W. R. (2007). Factors influencing successful buyer-seller relationships. *Journal of Business Research*, *60*(12), 1234–1242.
Prince, J. B., Katz, J., & Kabst, R. (2011). High-involvement information sharing practices: An international perspective. *International Journal of Human Resource Management*, *22*(12), 2485–2506.
Rindfleisch, A., & Moorman, C. (2001). The acquisition and utilization of information in new product alliances: A strength-of-ties perspective. *Journal of Marketing*, *65*(2), 1–18.
Samaha, S. A., Palmatier, R. W., & Dant, R. P. (2011). Poisoning relationships: Perceived unfairness in channels of distribution. *Journal of Marketing*, *75*(3), 99.
Sawhney, M. (2006). Going beyond the product, definition, designing, and delivering customer solutions. In R. F. Lusch, & S. Vargo (Eds.), *The service-dominant logic of marketing: Dialog, debate, and directions* (pp. 365–380). New York: M.E. Sharpe.
Schleimer, S., & Riege, A. (2009). Knowledge transfer between globally dispersed units at BMW. *Journal of Knowledge Management*, *13*(1), 27–41.
Sharma, A., & Iyer, G. (2011). Are pricing policies an impediment to the success of customer solutions? *Industrial Marketing Management*, *40*(5), 723–729.
Sheng, S., Zhou, K. Z., & Li, J. J. (2011). The effects of business and political ties on firm performance: Evidence from China. *Journal of Marketing*, *75*(1), 1–15.
Sheth, J. N. (2011). Impact of emerging markets on marketing: rethinking existing perspectives and practices. *Journal of Marketing*, *75*(4), 166–182.
Smirnova, M., Naudé, P., Henneberg, S., Mouzas, S., & Kouchtch, S. (2011). The impact of market orientation on the development of relational capabilities and performance outcomes: The case of Russian industrial firms. *Industrial Marketing Management*, *40*(1), 44–53.
Töllner, A., Blut, M., & Holzmüller, H. (2011). Customer solutions in the capital goods industry: Examining the impact of the buying center. *Industrial Marketing Management*, *40*(5), 712–722.
Tuli, K. R., Kohli, A. K., & Bharadwaj, S. G. (2007). Rethinking customer solutions: From product bundles to relational processes. *Journal of Marketing*, *71*(3), 1–17.
Vakratsas, D., & Ma, Z. (2009). Firm adaptiveness and performance heterogeneity: The case of sales-advertising dynamics in an evolving product market. *Journal of Evolutionary Economics*, *19*(1), 21–40.
van der Valk, W., & Wynstra, F. (2012). Buyer-supplier interaction in business-to-business services: A typology test using case research. *Journal of Purchasing and Supply Management*, *18*(3), 137.
Vargo, S. L., & Lusch, R. F. (2004). Evolving to a new dominant logic for marketing. *Journal of Marketing*, *68*(1), 1–17.
Wieland, U., Fischer, M., Pfitzner, M., & Hilbert, A. (2015). Process performance measurement system - Towards a customer-oriented solution. *Business Process Management Journal*, *21*(2), 312.
Wise, R., & Baumgartner, P. (1999). Go downstream: The new profit imperative in manufacturing. *Harvard Business Review*, *77*(5), 133–141.
Zahra, S. A. (2007). Contextualizing theory building in entrepreneurship research. *Journal of Business Venturing*, *22*(3), 443.