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The Effects of Social Capital and Knowledge on New Product Development Innovations in Small U.S. Firms

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Abstract

Studies have highlighted the benefits of external knowledge building as a means of heightening a firm's innovation activities. Simultaneously supply chain scholars have highlighted the lack of focus on social facets at the micro behavioral level, as well as the limited endeavors to build upon existing theories for new perspectives. Taking an exploratory approach to addressing literature gaps, the objectives of this research involve integrating constructs from social capital theory and the knowledge-based view of the firm to examine associations and interactions among network ties, social interactions, knowledge absorptive capacity, and knowledge acquisition in the development of new product innovations by U.S. apparel and sewn products manufacturers (N=125). Quantitative data were collected via an online survey of both a national and state sample of small sized manufacturers. Findings regarding new product development indicated: positive associations for network ties, social interactions, knowledge absorptive capacity, and knowledge acquisition; network ties and knowledge acquisition mediating effects of social interaction and absorptive capacity; and social interaction moderating effects of absorptive capacity and network ties. These empirical insights highlight the importance of building external relationships for generating knowledge in amplifying innovation. Theoretical contributions, managerial implications, limitations, and suggestions for future research are presented.

Keywords: Knowledge Acquisition; Absorption Capacity; Social Interaction; Networking; New Product Innovations.

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1 Introduction

Each firm's performance is dependent on the activities and operations of others thus a firm develops relationships for a combination of cooperative and competitive elements. Though they represent 99.9 % of all firms, small businesses are particularly vulnerable to poor performance and failure to develop business relationships (Small Business Administration, 2018). Ghoshal and Moran (1996) argue that failure often results when the firm is unable to generate the social context necessary for maintaining cooperation. Beckett and Chapman (2018) proposed that small and medium-sized firms innovate to survive, and the scope of innovation is influenced by what is learned through social or organizational networking. Fundamentally, this study seeks to clarity the concepts and connections impacting the social and organizational relationships across communities

of small businesses to advance understanding of diverse needs and to provide relevant mechanisms of change and support. The specific purpose of this research is to offer an analysis of how interfirm relationships and knowledge sharing aid in the process of building networking opportunities that contribute to new product development innovations and enhance firm survival.

Understanding the relationship between innovation and the use of social capital and knowledge-based resources warrants further research (Obeng, 2019). The links between social capital theory and the knowledge-based view of the firm perspective (KBV) are evident in Nahapiet and Ghoshal's (1998) following four conditions considered essential for the exchange and combination of resources to take place: the opportunity to access social knowledge must occur, these opportunities must be recognized as valuable, people must be driven to engage, and they must be capable of comprehending information. Thus, a study focused on integrating the knowledge-based view (KBV) with social capital theory provides the ability to examine the roles of social interaction and network ties in acquiring and absorbing knowledge. Discerning connections between social capital and knowledge commercialization is not a new to knowledge management research (Lee et al., 2021). The contribution this study offers is an exploration of theorized antecedents and connections impacting innovation. Accordingly, an empirical analysis was conducted with U.S. apparel and sewn products manufacturers.

Our choice to focus on the apparel manufacturing phase in the U.S. supply chain involves its current status and future role in the economy as firms in this segment of the industry must absorb technological innovations in materials and assembly as well as meet quality, cost, and circular economic expectations of both the retailers and consumers (Stephen, 2019). Textiles and apparel industries generate a global value of approximately $3 trillion and employ about 100 million people, making it among the largest in the world (Fibre2Fashion, 2019). Due to imports currently outstripping exports, the U.S. is however operating with a deficit of roughly 4.5 percent of its gross domestic product (Klein, 2020). Figures portraying the global perspective indicate the impact of COVID-19 has resulted in a $300 billion loss in textiles and apparel with revenues down 19 percent (Duthoit, 2020; Martin, 2021). Our motivation for examining this business sector is therefore two-fold. First, this study aims to fill a gap in our understanding of U.S. small apparel and sewn products manufacturing firms, employing less than 250 workers, as they leverage knowledge and relationships with the aim to improve innovation outcomes ultimately aiding in firm sustainability and fostering economic development in regions across the U.S. Second, we explore the effects of antecedents as well as the moderating and mediating mechanisms in these relationships to determine the degree to which theorized relationships from the knowledge-based view of the firm and/or social capital contribute directly and indirectly enlarging our understanding of dynamics shaping new product development in small-size manufacturing firms.

Malhotra et al. (2005) emphasized sharing supply chain information to build knowledge. However, scholars in the field of supply chain management report a lack of focus on the social aspects at the micro behavioral level, and the limited efforts to build upon existing theories for developing new perspectives (Touboulic and Walker, 2015). Our study responds to this concern by examining the influence of manufacturers' social interactions across the apparel supply chain in the generating and sharing of industry-related knowledge to enhance innovation. We attempt to control for contingency conditions by looking at similar supply chain relationships in one industry anticipating that the complexities facing these firms are also likely to be similar. Apparel and sewn products manufacturing supply chains are examined across two populations, within a single state and nationally.

2 Literature and Hypothesis Development

2.1 Theoretical frameworks

This research examines the power of four constructs from two theoretical foundations in contributing to the development of new products - interorganizational knowledge absorptive capacity and acquisition from the KBV perspective or theory of the firm, and social interaction and network ties from social capital theory. Knowledge is a resource including social complexity such as produced through interpersonal relationships (Kogut and Zander, 1992). Innovation has been defined as fundamental changes in a firm's technological path, involving the development of new products, services or production processes (Teece, 1992). Molina-Morales and Martinez-Fernandez (2010) considered innovation as ideas, practices, or objects that are new to the firm and when implemented are successful in the marketplace. Cohen and Levinthal (1990) and Xie et al. *(*2018) argue that outside sources of knowledge are vital to the process of innovation, and Belso-Martinez, et al. (2020) identify dense external networks facilitating the transmission of useful and multifaceted knowledge for innovation. The continual procurement of new knowledge and skills is also a competitive advantage requiring replenishment and has been identified as knowledge acquisition (Yli-Renko et al., 2001). We examine knowledge as a resource, following the KBV perspective, through the roles of knowledge absorptive capacity and knowledge acquisition. It is recognized that loss of firm-specific knowledge may be a potential problem for the firm, but lack of sharing knowledge may reduce the firm's access to new techniques or markets and delay or limit understanding of what is needed to advance innovation (Norman, 2004).

The second perspective in this study involves social capital theory, chiefly focusing on the building of social interactions and the building of networking ties as small business actions for facilitating new product development. Capital refers to a type of resource that furthers action (Neal, 2015), and the set of people with whom an individual interacts or communicates is considered that individual's social capital (Bourdieu, 1985; Coleman, 1988). Business organizations are involved in a value chain made up of a network of supplier and customer relationships (Greve and Salaff, 2001). This perspective has formed the theoretical foundation for exchange relationship research conducted in the fields of sociology and business for advancing the exchange of resources (Portes, 1998), as a critical resource for the firm (Jarillo, 1988), and to reduce uncertainty for small businesses and entrepreneurs (Johannisson et al., 1994; Kubberod et. al., 2019). Key concepts in social capital theory suggest that social interactions and people oriented organizational cultures can be preconditions for sharing of knowledge and building ties (Yli-Renko et. al., 2001). The structural components of networking involve the building and maintaining of linkages or ties that form the conduits for moving information and enhancing success (Granovetter, 1982). Social capital concepts underpinning networking have been explicitly integrated to build understanding about the strength of group-oriented actions such as an alliance of Italian knitting and apparel manufacturers (Putnam et al., 1993), embeddedness in the New York City apparel industry (Uzzi, 1996), and networking among apparel business owners (Besser and Miller, 2011; Miller et al., 2007).

There remains a controversy within the field of economics regarding the empirical value of social capital's use as an analytic tool; however, micro-economic work by Gannon and Roberts (2020) found multiple dimensions of social capital held positive associations with health demonstrating the importance of accounting for the multi-dimensionality in empirical work. This investigation seeks to address the major challenges of social capital research, namely, measuring a concept that is notoriously difficult for measurement and choosing among the exhaustive list of direct, indirect, and consequential measures (Engbers et al., 2017, 2018). More empirical research is needed that

directly measures business owner relationships and the benefits that accrue from them such as enhanced innovation. An additional challenge is that different concepts embodied in social capital and knowledge garnering may be associated with each other in ways that are not immediately obvious but may better inform our interpretation of their complementary effects on development of new product innovations.

Social capital theory and the KBV of the firm perspective overlap as business networks provide opportunities, often through various levels of social interaction, for commercial exchange of goods and producer services as well as professional exchange of problem or opportunity-oriented know-how (Johannisson et al., 1994). Prior research has examined and found certain constructs from the two theoretical perspectives to be interrelated. To further understanding of the integrated impact of social capital theory and the KBV perspective, we empirically test hypotheses where four concepts are hypothesized to interact with each other in synergistically influencing the generation of product development. Concepts related to small business product development and innovation are included in discussion of the individual constructs. We expect these constructs to complement each other in a manner that an increase in the level of one construct enhances the contribution of the other construct.

2.2 Knowledge absorptive capacity

Knowledge absorptive capacity is defined as, "... a firm's ability to value, assimilate, and utilize new external knowledge" (Lane and Lubatkin, 1998, p. 461). Many studies have found absorptive capacity as a predictor of organizational learning (Lane and Lubatkin,1998). Several studies have examined the impact of absorptive capacity's impact on the KBV of the firm (Lane and Lubatkin, 1998; Limaj and Bernroider, 2017), knowledge acquisition (Li et al., 2017; Norman, 2004; Yli-Renko et al., 2001), and identifying new knowledge or market intelligence to achieve innovation (Ali et al., 2016; Cohen and Levinthal, 1990), or a competitive advantage (Cousins, 2018). Work by Sancho-Zamora et al. (2021), in small and medium sized Spanish companies, affirmed that firms with higher levels of absorptive capacity made stronger use of information gathered from outside sources that in turn improved their innovation results. A firm's absorptive capacity directs the strength and type of knowledge flows involving the organization's routines and processes for acquiring, adapting, and using knowledge to advance the organization's know-how (Malhotra et al., 2005). The premise of absorptive capacity, according to Cohen and Levinthal (1990), is that to be able to acquire and utilize new knowledge, the organization needs to possess prior related knowledge rendering the new knowledge fully understandable. In prior studies of technology-based firms, absorptive capacity was found central to advancing innovations (Lane and Lubatkin, 1998). Based upon the proceeding arguments, we propose:

(H1): Knowledge absorptive capacity is positively correlated with a firm's new product development.

2.3 Social interaction

Social capital enhances knowledge sharing and learning that enhances the collaborative organization's innovation (Nahapiet and Ghoshal, 1998, Tsai and Ghoshal, 1998). Research by Greve and Salaff (2001) demonstrated the importance of social capital in generating ideas and organizing knowledge in social networks. Nielsen and Nielsen (2009) emphasized the importance of meaningful communication, produced through social interaction, as essential in the exchange and the knowledge integration facilitating innovation. Teece (1992) found strategic alliances to grow in importance as the group's cooperative influence overcomes an individual or small-sized firm's deficiencies or problems thus enabling technology in support of a firm's innovation. Recent research

suggest social network sites are important for building and maintaining social ties through provision of interaction opportunities (Kramer et al., 2021) and that in educational settings, student study networks and social linkages are tied to enhanced performance outcomes (Fjelkner-Pihl, 2022). There is also evidence that social networking, via a coauthored network, demonstrates scientific success is highly correlated with a scientist's collaborative network (Franczak et al., 2022). This present study examines how apparel manufacturing firms access and link complementary assets as antecedents influencing the development of new products. The social conditioning of cooperation amends motives relative to shared purpose such as found in strategic networks (Jarillo, 1988). Given this logic, we propose:

(H2): Social interaction is positively correlated with a firm's new product development.

2.4 Knowledge acquisition

Knowledge acquisition has been examined and found necessary, but not sufficient to move the new information into development of marginally enhanced products or services (Limaj and Bernroider, 2017). Here we examine knowledge acquisition from external or inter-organizational sources and define knowledge acquisition, based upon Zahra and George (2002), as the firm's intense interactive processes to procure new technology and know-how. We maintain that the extent to which an apparel manufacturing firm develops new products is partially dependent on the firm's capacity to acquire external knowledge. To summarize:

(H3): Knowledge acquisition is positively correlated with a firm's new product development.

2.5 Network ties

Social capital theory posits that the network is defined by a set of individuals or institutions who are connected through a set of links also known as network ties (Henry and Vollan, 2014). The existence of ties among networked firms is considered an important determinant of innovation through the collective application of participants' knowledge and contributes to the accomplishment of creativity that is a critical component for achievement of competitive advantage (Lungeanu and Contractor, 2014). Network ties, as defined in this study, are interfirm agreements among firms who share or exchange their resources in a cooperative effort to achieve a collective goal (Teece, 1992). The term network is used to represent social, professional, and exchange relationships with other entities (Granovetter, 1982). Following the categories proposed by Achrol and Kotler (1999), we examine vertical networks ties that create partnerships or arrangements among independent but ability- or capacity-specific firms.

Cohen and Levinthal (1990) considered that an active network of internal and external relationships, reinforced an awareness of others' capabilities and knowledge. They indicated that, through close buyer-seller relationships, innovations were bolstered. Pertaining to SMEs, MacGregor (2004) and Floren (2003) considered owner-manager's network relationships to create opportunities for exchanging different expert opinions thus foster confidence-building and increased knowledge. Mitra (2000) found that SMEs who were part of a network were better able to innovate than similar firms that did not network. The level of perceived important linkages or connections by a set of individuals or institutions external to the firm are proposed to enhance innovation in the form of new product development. Reframing the proposed link, we hypothesize:

(H4): A firm's level of perceived important network ties is positively correlated with a firm's new product development.

2.6 Mediating roles of network ties and knowledge acquisition

Knowledge management has performed a mediating role in exploratory and exploitative innovations (Limaj and Bernroider, 2019; Xie et al., 2018). Although previous literature indicates that individually absorptive capacity and social interaction, as well as knowledge acquisition and network ties, each have a positive effect on firm innovation (Molin-Morales and Martinez-Fernandez, 2010), the prior studies have not examined the combination of these specific four variables in an analysis. Recent work by Ng et al. (2020) found product innovation mediates the relationship of SME's entrepreneurial competence and performance. Yli-Renko et al. (2001) determined social capital advanced knowledge acquisition, and Larson (1992) found that higher levels of social interaction between an entrepreneur and an exchange partner provided higher business information acquisition.

We argue that the inclusion of knowledge acquisition and network ties as mediating factors may provide further insights as to components complementing development of new product development innovations. We therefore empirically examine the direct and indirect links between relational capital, expressed as social interactions and network ties constructs, and KBV perspectives, expressed as knowledge absorptive capacity and knowledge acquisition constructs, with new product development innovations, leading to the following hypotheses.

(H5): Knowledge acquisition mediates the relationship between:
- *a. knowledge absorptive capacity and new product development.*
- *b. social interaction and new product development.*

(H6): Network ties mediates the relationship between:
- *a. knowledge absorptive capacity and new product development.*
- *b. social interaction and new product development*.

2.7 Moderating roles of social interaction and absorptive capacity

Central to our hypotheses, is the argument that social interaction and knowledge absorptive capacity are embedded in knowledge acquisition and generating network ties and may moderate relationships. There is less research connecting social interaction directly with absorptive capacity, though social capital in the form of inter-industry ties has been linked with knowledge absorptive capacity (Cohen and Levinthal, 1990; Li et al., 2017). To examine the potential interaction effects, we propose that product development will increase as knowledge absorptive capacity increases for firms with higher social interaction than for firms with lower social interaction. This relationship is stated as:

(H7): Social interaction will moderate the relationship between knowledge absorptive capacity and new product development.

There was no theoretical reason for favoring an interaction among any of the four independent variables, particularly as two separate theoretical foundations were considered by using constructs from social capital and the KBV of the firm; however, there are several studies that investigate partial combinations of social interaction, network ties, knowledge absorptive capacity, and knowledge acquisition as to their relationship with firm innovations. Xie et al. (2018) considered the impact of inter-organizational knowledge, in the form of knowledge acquisition, together with absorptive capacity, contributed to a firm's radical innovation. Li et al. (2017), in examining the impact of knowledge acquisition on innovation capacity, found the indirect effects of informal or social interaction on innovation capability to be moderated by knowledge application. In their study they addressed the firm's ability to acquire, absorb, and apply the knowledge. Stam and Elfring (2008) examined the moderating effects of both intra- and extra-industry network

ties and firm performance. Bridging ties generated with external firms were found to hold a significant and positive effect on performance suggesting external ties often stimulate exposure to new market trends and generate innovative solutions. We extend their model to examine the potential moderation roles of knowledge absorptive capacity and social interaction on knowledge acquisition and network ties as formalized in two hypotheses.

(H8): Knowledge absorptive capacity will positively moderate relationships with new product development efforts in the following ways.

a. Knowledge acquisition: new product development will increase more as knowledge acquisition increases for firms with higher absorptive capacity than for firms with lower absorptive capacity.

b. Network ties: new product development will increase more as network ties increase for firms with higher absorptive capacity than for firms with lower absorptive capacity.

(H9): Social interaction will positively moderate relationships with new product development efforts in the following ways.

a. Knowledge acquisition: new product development will increase more as knowledge acquisition increases for firms with higher social interaction than for firms with lower social interaction.

b. Network ties: new product development will increase more as network ties increase for firms with higher social interaction than for firms with lower social interaction.

3 Methodology

3.1 Data sources and collection

An attempt was made to include a broad range of participants in examining existing and prospective apparel and sewn product industry linkages that enhance innovation in the form of new product development. To that end, data were collected from two different sources. Data were collected from a sample of apparel/sewn products manufacturers from both a western U.S. state and at a national level. The questionnaire was developed for online distribution and pretested with manufacturers who exemplified this area of U.S. manufacturing. We sent the survey, via Qualtrics, to owners or managers responsible for firm key decision-making facets.

A list of potential national participants was derived from the North American Industrial Classification System (NAICS). Selected were major area 23: Apparel and other finished products made from fabrics and similar materials, under the older Standard Industrial Classification system, and Major area 3152: Cut and Sew Apparel Manufacturing were selected (Office of Management and Budget, 2020). The western U.S. state sample was generated from small-sized business participants who attended the annual apparel and sewn products manufacturing Summit for advancing industry connections held in the western state from 2014 through 2018. To coincide with business size of the western state sample, a list of national businesses with fewer than 250 employees were requested from NAICS. After removal of the non-functioning e-mail address, 2350 national firms and 170 western state firms were contacted by e-mail requesting participation in an online survey. The data was collected from June 2019 to November 2019. Three attempts were made to secure responses following methods suggested by Dillman et al., (2009).

There were 125 total responses including a national sample total of 77 responses generating 45 completed responses, and a total of 48 western state responses generating 37 completed responses. Though several steps were taken to maximize the response rate, one recognized limitation resulted from the number of participating firms at the national level (3.28%) and the state level (28.23%),

for a combined total response rate of 4.96%.

Common method bias was assessed addressing the risk associated with gathering data for all dependent and independent variables from a single key informant from each firm. We conducted Harman's single-factor test as a diagnostic technique by loading all variables into an exploratory factory analysis (Podsakoff and Organ, 1986). The 31.42% variance explained by a single factor implies that common method bias was not likely a contaminant in this study as multiple factors emerged.

To examine a potential non-response bias, independent *t*-tests were performed between the early and late respondents on the key variables. No significant differences ($p > .494$) were identified between the early and late respondents to our online survey (Armstrong and Overton, 1977).

3.2 Main variables

Five scales were incorporated for the study each developed by summing the mean scores for each 7-point Likert-type item involved (see Table 1). The scale items were built upon theoretical and empirical research based on industrial alliances, technology firms, research and development divisions, and pharmaceutical companies. Following the research of Cohen and Levinthal (1990), who had investigated the role of absorptive capacity in research and development within the U.S manufacturing sector, and Lane and Lubatkin's work (1998), involving existing alliances between pharmaceutical and biotechnology companies and the relationship between absorptive capacity and interorganizational learning, knowledge absorptive capacity was measured by four items with a Cronbach's alpha of 0.73 and labeled ACSCA. Respondents were required to note the degree to which they found various statements regarding their company's absorptive capacity important. We applied the work of Johannisson et al. (1994), who considered networks as a source of socio-economic interaction enlarging entrepreneurial firms' knowledge of opportunities and meeting business challenges, and also Yli-Renko et al. (2001), to measure the importance of social interaction for the firms in our sample. Modifications from Yli-Renko et al. work examining technological -based firms were made to reflect the apparel-based firms in developing survey questions. A 7-point Likert-type scale of two items was used with a correlation of 0.712 and labeled SISCA. A measure of knowledge acquisition was developed and modified from the research by Yli-Renko et al. (2001) and consisted of six items with a Cronbach's alpha of 0.70 and labeled KASCA. The 7-point Likert-type items asked respondents to indicate the degree to which they agreed with each of statement regarding the acquisition of knowledge. To measure network ties, we followed the work of Henry and Vollan (2014) whose research provided understanding of networks and their relationships with sustainability outcomes, along with work by Teece (1992), and Yli-Renko et al. (2001). Respondents were required to note their perceived importance, on a 7-point scale, in response to 10 statements. The scale, labeled NTSCA held a Cronbach's alpha of 0.79. Following the research of Cohen and Levinthal (1990) and Teece (1992), new product development was measured by seven items generating a Cronbach's alpha of 0.72 and labeled NPDSCA. Respondents were required to note the degree to which they found five statements regarding their company's new product development important, and two statements regarding the degree to which they agreed in terms of new product development. Cronbach's alpha and correlation scores for all scales suggest adequate reliability for exploratory research (Nunnally and Bernstein, 1994).

3.3 Control variable

The control variable involving firm location was included as the sampling of both the western

state and the national firms suggested differences in sample populations for respondents' gender, age, and prior work expertise. Among the western state participants there were more female respondents (31.7%) than among the national firms (20.3%). The mean age of the western state respondents was 49 years of age versus the national sample with a mean of 56 years of age. The western state respondents self-rated their prior knowledge level as 'more than average' to a 'great deal of expertise' with a mean of 4.92; whereas the national sample held a mean of 2.93 indicating 'very little' to an 'average amount of expertise'. No differences were found regarding firm location for level of innovation and entrepreneurship pursued by the firm, overall business success, achievement of business goals, number of employees, and net profits.

4 Analyses and Results

Directly measuring intangible concepts such as those embodied in social capital theory and KBV perspectives is difficult (Engbers et al., 2017). We followed the method of analysis by Xie, et al. (2018), who advanced understanding of mediating mechanisms in the relationships between knowledge absorptive capacity and acquisition, and firms' innovation performance among high tech firms in China through multiple regression analyses. This traditional method of using a series of multiple regression analyses in the current study allowed examination of the nine hypotheses with multiple models demonstrating the effects of factors that mediate and moderate relationships (Kenny, 2018, 2021). Through these multiple analyses examining the determinants, or factors that are proposed to have an impact on new product development, we examined whether the path from the determinant was reduced in absolute size or no longer evident (zero paths) when additional variables were introduced, as hypothesized. The basic OLS assumptions, put forth by Green (2003), were examined and met and no variable transformations were conducted.

The aim of the analyses was to consider how aspects of social capital theory and the KBV perspective further small firm new product development. To this aim, we first calculated regression models to examine the associations (Hypotheses 1, 2, 3, and 4), followed by analyses of mediation (Hypotheses 5 and 6), and then checked for moderation (Hypotheses 7, 8, and 9). To confirm the moderations matched the relationships stated in the hypotheses, a post-hoc analysis of simple slopes was performed using the R package emmeans (Lenth, 2019). The dataset comprised 125 US textile and apparel manufacturers: 48 in the western state, and 77 nationwide. There was evidence of positive correlation between all pairs of observed variables with mean scores ranging from 4.288 to 5.425 on a 7-point scale (Table 1).

Table 1. Results of correlation analysis

Variables	Mean	S.D.	ACSCA	*p*	SISCA	*p*	KASCA	*p*	NTSCA	p
NPDSCA	4.288	0.892	0.459	<0.001	0.345	0.001	0.634	<0.001	0.621	<0.001
ACSCA	5.425	0.886	1.000		0.213	0.047	0.350	0.001	0.625	<0.001
SISCA	4.506	1.488			1.000		0.376	<0.001	0.505	<0.001
KASCA	4.358	0.963					1.000		0.377	<0.001
NTSCA	4.813	0.889							1.000	

Note: N=82 for all statistics involving knowledge acquisition, 87 for all other statistics involving new product development, and 88 for all other statistics.

4.1 Characteristics of the sample

A total of 125 valid responses were returned, of which 82 were complete. The combination of state and national participants was largely entrepreneurial (91.8%) and participants were often business founders (46.8%). Approximately half of the participants were males (52%) and half were females (48%) ranging from 28 to 83 years of age with a mean of 53 years. Nearly half held bachelor's degrees or higher (47.7%), and most had knowledge of the production business prior to involvement in their current business (72.5%).

Firm owners evaluated their businesses as existing entities with the majority in the growth or mature stage. The range in years of business was broad given the oldest business was 127 years and the youngest one year, however the first and third quartiles indicate respectively 34 and 8 years in business. Work by MacGregor (2004) found firms with fewer than ten employees were more likely to be involved in a network. The majority of our study's firms were located in urban communities across the U.S., fairly small in size with 10 or fewer employees involving an average of four fulltime and two part time employees. These numbers are consistent with the Small Business Administration's (2018) reporting that 80 percent of small U.S. businesses had no employees and startup employment averaged six employees per firm.

4.2 Results

To assess the linear relationships of new product development with multiple variables, Ordinary Least Squares (OLS) regression was used for the analyses. This method has been historically used for examining network ties (Sequeira et al., 2007), knowledge acquisition (Norman, 2004), and absorptive capacity (Xie et al., 2018), and is widespread in the research literature on knowledge and innovation (Lane and Lubatkin, 1998; Li et al., 2017; Norman, 2004; Xie et al., 2018).

Associations

The five scales' mean scores, on a 7-point scale, ranged from a low of 4.288 for new product development to a high of 5.425 for knowledge absorptive capacity; thus, there was an indication that these small sized manufacturing firms were involved or interested in the determinants of absorptive capacity, network ties, social interaction, knowledge acquisition, and new product development. We first investigated possible singular determinants for their direct effects on new product development. The regression results for examining associations are provided in Table 2.

Model 1 included only the control variable of location. Model 2 included location and absorptive capacity. Absorptive capacity was positively related to firm new product development ($B = 0.456$, $p < 0.001$), supporting H1. Model 3 included location and social interaction. There was evidence that social interaction was positively related to new product development ($B = 0.182$, $p = 0.005$). Thus, H2 was supported. Model 4 included the variables of location and knowledge acquisition. The results from Model 4 supported H3, that knowledge acquisition was positively related to new product development ($B = 0.576$, $p < 0.001$). Model 5 included location and network ties. The results from Model 5 supported H4 in that network ties were positively related to new product development ($B = 0.617$, $p < 0.001$).

Mediation

Next, we examined the potential effects of the determinants on knowledge absorptive capacity, from the KBV perspective, new product development. Table 3 holds the regression results of the mediating effects using Baron and Kenny's (1986) three-step test. There was evidence supporting a positive relationship between absorptive capacity and knowledge acquisition ($B = 0.369$, $p < 0.001$; Model 6). When knowledge acquisition was included with absorptive capacity to predict

Table 2. Results of OLS regression for associations

Variables	Dependent Variable New Product Development (NPDSCA)				
	Model 1	Model 2 (H1)	Model 3 (H2)	Model 4 (H3)	Model 5 (H4)
	B (*SE*)	*B* (*SE*)	*B* (*SE*)	*B* (*SE*)	*B* (*SE*)
	p	*p*	*p*	*p*	*p*
Intercept	4.104 (0.125)	1.680 (0.563)	3.348 (0.287)	1.706 (0.361)	1.227 (0.431)
	<0.001	0.004	<0.001	<0.001	0.006
Control variable					
Western State	0.422 (0.189)	0.269 (0.174)	0.275 (0.188)	0.227 (0.159)	0.180 (0.156)
	0.028	0.126	0.148	0.156	0.252
Predictors					
ACSCA		0.456 (0.104)			
		<0.001			
SISCA			0.182 (0.063)		
			0.005		
KASCA				0.576 (0.082)	
				<0.001	
NTSCA					0.617 (0.090)
					<0.001
n	87	87	87	82	87
R Square	0.056	0.232	0.141	0.417	0.395
Adj. R Square	0.044	0.214	0.121	0.402	0.380
F value	5.000	12.717	6.894	28.268	27.388

Note: Unstandardized regression coefficients (B), standard errors (SE), p-values (p), sample size (n), R^2, adjusted R^2, and F-statistic for regression models examining associations between variables.

new product development, the coefficient for absorptive capacity was somewhat smaller ($B = 0.293$, $p = 0.003$; Model 8), than when knowledge acquisition was not included ($B = 0.456$, $p < 0.001$; Model 2). From Model 8, there was evidence of a relationship between knowledge acquisition and new product development accounting for absorptive capacity ($B = 0.493$, $p < 0.001$). These results supported H5a in that knowledge acquisition mediated the relationship between absorptive capacity and new product development. In sum, higher knowledge absorptive capacity was associated with higher knowledge acquisition, and higher knowledge acquisition was associated with higher product development. There was also evidence that a firm's social interaction was positively related to its knowledge acquisition ($B = 0.236$, $p = 0.001$; Model 7). When both social interaction and knowledge acquisition were used to predict new product development, the coefficient of the social interaction model was not significant and somewhat smaller ($B = 0.068$, $p = 0.257$; Model 9) than when knowledge acquisition was not included ($B = 0.182$, $p = 0.005$; Model 3). There was evidence in Model 9 of a positive relationship between knowledge acquisition and new product development accounting for social interaction ($B = 0.541$, $p < 0.001$). These significant relationships suggested that knowledge acquisition mediated the relationship of social interaction and new product development supporting Hypothesis 5b. Thus, higher social interaction was associated with higher knowledge acquisition, and higher knowledge

acquisition was associated with higher new product development.

Table 3. Results of OLS regression for mediation

Variables	Dependent Variable Knowledge Absorption (KASCA) (H5)		Dependent Variable New Product Development (NPDSCA)					Dependent Variable Network Ties (NTSCA) (H6)	
	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14
	B (*SE*) *p*	*B* (*SE*) *p*	*B* (*SE*) *p*	*B* (*SE*) *p*	*B* (*SE*) *p*	*B* (*SE*) *p*	*B* (*SE*) *p*	*B* (*SE*) *p*	*B* (*SE*) *p*
Intercept	2.250 (0.658) 0.001	3.180 (0.336) <0.001	0.505 (0.518) 0.332	1.560 (0.383) <0.001	0.851 (0.526) 0.109	1.222 (0.434) 0.006	0.060 (0.491) 0.903	1.456 (0.464) 0.002	3.451 (0.263) <0.001
Control variable									
Western State	0.219 (0.207) 0.292	0.200 (0.205) 0.333	0.146 (0.153) 0.342	0.194 (0.161) 0.231	0.164 (0.156) 0.296	0.173 (0.160) 0.282	0.091 (0.143) 0.524	0.198 (0.153) 0.201	0.197 (0.172) 0.256
Predictors									
ACSCA	0.369 (0.122) 0.003		0.293 (0.095) 0.003		0.139 (0.112) 0.218		0.049 (0.106) 0.646	0.603 (0.086) <0.001	
SISCA		0.236 (0.072) 0.001		0.068 (0.060) 0.257		0.014 (0.060) 0.821	-0.053 (0.058) 0.368		0.283 (0.058) <0.001
KASCA			0.493 (0.083) <0.001	0.541 (0.088) <0.001			0.459 (0.116) <0.001		
NTSCA					0.539 (0.109) <0.001	0.606 (0.103) <0.001	0.449 (0.080) <0.001		
n	82	82	82	82	87	87	82	88	88
R Square	0.135	0.152	0.481	0.427	0.406	0.395	0.573	0.402	0.267
Adj. R Square	0.113	0.130	0.461	0.405	0.384	0.373	0.545	0.388	0.249
F value	6.163	7.072	24.08	19.351	18.892	18.07	20.393	28.614	15.446

Note: Unstandardized regression coefficients (B), standard errors (SE), p-values (p), sample size (n), R^2, adjusted R^2, and F-statistic for regression models examining mediation relationships.

A firm's absorptive capacity was positively related to its network ties ($B = 0.603$, $p < 0.001$; Model 13). When absorptive capacity and network ties were used to predict new product development (Model 10), the coefficient of absorptive capacity was not significant ($B = 0.139$, $p = 0.218$) There was also evidence of a positive relationship between network ties and new product development accounting for knowledge acquisition, ($B = 0.539$, $p < 0.001$; Model 10). These outcomes supported Hypothesis 6a, in that network ties mediate the relationship between absorptive capacity and new product development. Thus, higher knowledge absorptive capacity was associated with higher network ties, and higher network ties was associated with higher new product development.

There was evidence that a firm's social interaction was positively related to its network ties ($B = 0.283$, $p < 0.001$; Model 14). When social interaction and network ties were used to predict new product development, the coefficient of social interaction was not significant ($B = 0.014$, $p = 0.821$; Model 11), indicating an effect. There was also evidence of a relationship between network ties and new product development accounting for social interaction ($B = 0.606$, $p <$

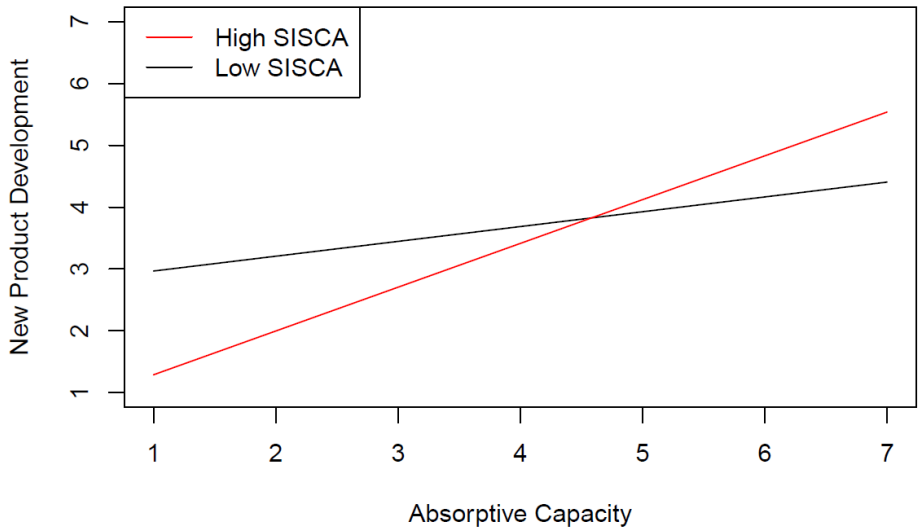

Figure 1. Interaction plot of new product development (NPDSCA) versus absorptive capacity (ACSCA) by values of social interaction (SISCA).

0.001; Model 11). This suggested that network ties mediated the relationship between social interaction and new product development and thus H6b was supported. Higher social interaction was associated with higher network ties, and higher network ties was associated with higher new product development. It is visible in Model 12 that coefficients of neither absorptive capacity (B = 0.049, p = 0.646) or social interaction (B = -0.053, p = 0.368) were significant with knowledge acquisition (B = 0.459, $p < 0.001$) and network ties (B = 0.449, $p < 0.001$) included in the model. This supports mediation by knowledge acquisition and network ties on the relationship of both absorptive capacity and social interaction with new product development.

Moderation

Results for the regression analyses examining the moderation hypotheses (H7, H8, H9) are presented in Table 4. Each hypothesis was examined individually in a linear regression model. In each of these models (15-19) the response variable was new product development controlled for location. Model 15 included absorptive capacity, social interaction, and the interaction of absorptive capacity and social interaction as predictors. There was evidence that social interaction moderated the relationship between absorptive capacity and new product development (B = 0.156, p = 0.008; Model 15). Examining the simple slopes, at the first quartile of social interaction (Low SISCA, Q1 = 3.00), new product development increased by 0.240 (p = 0.046) per one unit increase in absorptive capacity, while at the third quartile of social interaction (High SISCA, Q3 = 6.00), new product development increased by 0.708 ($p < 0.001$) per one unit increase in absorptive capacity (see Figure 1). A test of a simple slopes contrast showed evidence of a difference in the relationship between absorptive capacity and new product development from when social interaction was at the first quartile to when social interaction was at the third quartile (p = 0.008). Thus, there was evidence that new product development increased as absorptive capacity increased at low values of social interaction, and the increase in new product development per unit increase in absorptive capacity was higher at high values of social interaction than at low values of social interaction. This supported H7 that social interaction positively moderated the effect of absorptive capacity on new product development.

Table 4. Results of OLS regression for moderation

Variable	**Dependent Variable** **New Product Development** (NPDSCA)(H7, H8, H9)				
	Model 15	Model 16	Model 17	Model 18	Model 19
	B (*SE*)	*B* (*SE*)	*B* (*SE*)	*B* (*SE*)	*B* (*SE*)
	p	*p*	*p*	*p*	*p*
Intercept	4.825 (1.414)	2.436 (2.255)	3.268 (2.517)	2.932 (1.054)	4.761 (1.260)
	0.001	0.284	0.198	0.007	<0.001
Control variable					
Western State	0.128 (0.169)	0.150 (0.153)	0.158 (0.156)	0.188 (0.160)	0.119 (0.154)
	0.449	0.330	0.314	0.244	0.441
Main effects					
ACSCA	-0.229 (0.258)	-0.058 (0.410)	-0.300 (0.461)		
	0.377	0.888	0.518		
SISCA	-0.716 (0.322)			-0.241 (0.229)	-0.804 (0.281)
	0.029			0.296	0.005
KASCA		0.013 (0.553)		0.199 (0.260)	
		0.982		0.446	
NTSCA			-0.006 (0.565)		-0.161 (0.276)
			0.992		0.561
Two-way interaction					
ACSCA x SISCA	0.156 (0.058)				
	0.008				
ACSCA x KASCA		0.086 (0.098)			
		0.382			
ACSCA x NTSCA			0.097 (0.099)		
			0.329		
SISCA x KASCA				0.075 (0.054)	
				0.167	
SISCA x NTSCA					0.173 (0.058)
					0.004
n	87	82	87	82	87
R Square	0.344	0.486	0.413	0.441	0.454
Adj. R Square	0.312	0.459	0.384	0.412	0.427
F value	10.76	18.20	14.40	15.18	17.05

Note: Unstandardized regression coefficients (B), standard errors (SE), p-values (p), sample size (n), R^2, adjusted R^2, and F-statistic for regression models examining moderating relationships.

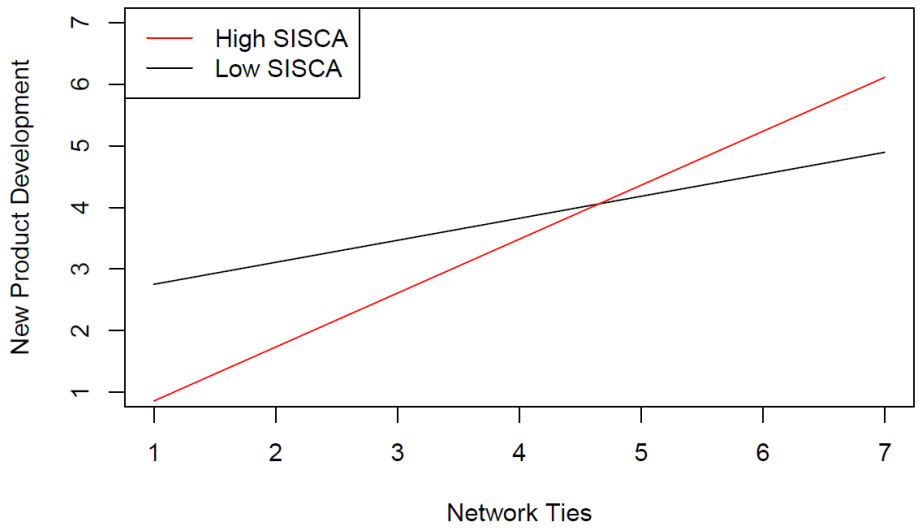

Figure 2. Interaction plot of new product development (NPDSCA) versus network ties (NTSCA) by values of social interaction (SISCA).

Model 16 included absorptive capacity, knowledge acquisition, and the interaction between absorptive capacity and knowledge acquisition as predictors. There was no evidence that absorptive capacity moderated the relationship between knowledge acquisition and new product development ($B = 0.086$, $p = 0.382$; Model 16). H8a was not supported. Model 17 included absorptive capacity, network ties, and their interaction. There was no evidence that absorptive capacity moderated the relationship between network ties and new product development ($B = 0.097$, $p = 0.329$; Model 17). H8b was not supported. Model 18 included social interaction, knowledge acquisition, and their interaction as predictor variables. There was no evidence that social interaction moderated the relationship between knowledge acquisition and new product development ($B = 0.075$, $p = 0.167$; Model 18). H9a was not supported.

Model 19 included social interaction, network ties, and their interaction as predictors. There was evidence from Model 19 that social interaction moderated the relationship between network ties and new product development ($B = 0.173$, $p = 0.004$). Examining the simple slopes, at the first quartile of social interaction (Low SISCA, Q1 = 3.00), new product development increased by 0.357 ($p = 0.007$) per one unit increase in network ties. At the third quartile of social interaction (High SISCA, Q3 = 6.00), new product development increased by 0.876 ($p < 0.001$) per one unit increase in network ties (see Figure 2). A test of the contrasts of simple slopes confirmed evidence of a difference in the relationship between network ties and new product development from the first and third quartiles of social interaction ($p = 0.004$). Thus, there was evidence that new product development increased as network ties increased at low levels of social interaction, and the increase was greater at high levels of social interaction. In support of H9b, new product development increases more as network ties increase at both low and high levels of social interaction, and the increase is greater at high levels of social interaction.

5 Discussion and Conclusions

First, this study aimed to fill a gap in our understanding of U.S. small apparel and sewn products manufacturing firms, employing fewer than 250 workers, as they leverage knowledge and relationships with the aim to improve innovation outcomes, ultimately aiding in firm sustainability

and fostering economic development in regions across the U.S. Second, we explored the effects of antecedents as well as the moderating and mediating mechanisms in these relationships to determine the degree to which theorized relationships from the knowledge-based view of the firm and/or social capital contribute directly and indirectly enlarging our understanding of dynamics shaping new product development in small-size manufacturing firms. Table 5 provides a summary of the hypothesized and discovered relationships examined in this study.

We concentrated on constructs from the two theoretical perspectives of social capital and the knowledge-based view of the firm to ascertain their relationship with firm innovation in the form of new product development. Mean scores suggested the participating firms were involved or interested in the four proposed determinants of new product development. We first proposed associations between the social capital constructs of social interaction and network ties among members in the apparel supply chain with firm-level new product development. We also proposed associations between the KBV of the firm constructs of knowledge absorptive capacity and knowledge acquisition with new product development. Finding support for these proposed direct relationships (H1-H4) aligned with findings by Xie et al. (2018) and Lie et al. (2017). These findings suggest that the small-sized firms were employing knowledge absorptive capacity and acquisition, social interaction, and building network ties in an effort to enhance new product innovations.

Further analyses explored mediation effects when multiple proposed determinantes were examined simultaneously for their relationship with new product development. We found significant relationships between both absorptive capacity and social interaction with both knowledge acquisition and network ties (Models 6,7,13, and 14). We also found significant effects of knowledge acquisition and network ties individually on new product development when absorptive capacity and social interaction were included in the model one at a time (Models 8-12). These empirical findings revealed support for social interaction and knowledge absorption capabilities as individual proficiencies critical for knowledge acquisition and building network ties that mediated the connection to new product development innovations (H5-H6). Additionally, absorptive capacity and social interaction were found to be significantly related to both knowledge acquisition and network ties but were not significantly associated with new product development with all antecedents were entered (Model 12) suggesting that the mediation relationships are the primary mechanism connecting absorptive capacity and social interaction to new product development. Thus, these two constructs, from social capital and KBV, extended insights concerning proficiencies and mediations involved with new product development. Further analyses were warranted to clarify the potential connections among the determinants in terms of new product development.

We proposed that the impacts of social interactions and knowledge absorption capacity on new product development. innovation were moderated by the degree of either knowledge acquisition or network ties (H7-H9). Social interaction was found to interact with absorption capacity, and additionally also with network, ties in explaining new product development, thus examining concepts from social capital and KBV perspectives expanded understanding of innovation management. There was some degree of support for the moderation of knowledge absorptive capacity by social interaction in explaining new product development, as illustrated in Figure 1. These findings suggest that higher levels of social interaction facilitate a greater relationship between absorptive capacity and new product development. A potential mechanism for this is that the knowledge pertaining to how the new product development information garnered related. A second mechanism involves whether or not it was deemed important to absorb or utilize given the firm's existing resources and capabilities as enhanced with knowledge sharing during external firm social interactions. Discovering a stronger significant relationship between network ties with new product

development at higher levels of social interaction than at lower levels of social interaction clarified that social interaction enhances the link between network ties and new product development. Finding evidence that network ties mediate the relationship between social interaction and new product development, and that social interaction also moderates the relationship between network ties and new product development suggests there could be moderated mediation involved. This relationship between social interaction, network ties, and new product development, could be more fully investigated further in the future.

We met our first goal of this investigation by contributing to the understanding of innovation management research by integrating social capital and KBV concepts thus theoretically and empirically demonstrating both mediating and moderating effects of four antecedents on new product developments. Table 5 summarizes the theoretical basis of the antecedents and highlights the relationships among the constructs with new product development. The importance of our contribution to research lies in the fact that external social-based connections with individuals outside the firm can lead to network tie relationships as well as facilitate knowledge acquisition potentially breeding inducements for developing new products. This possibility is suggested by the moderation of absorptive capacity by social interaction. Similarly, knowledge absorptive capacity contributes to both knowledge acquisition and building network ties enhancing new product development. Another plausible explanation is that external interactions and absorption capacity supporting knowledge acquisition and network ties assist in new product development by reducing the level of risk often associated with product innovation. Association, mediation, and moderation among concepts inherent in both social capital theory and the KBV perspective offer plausible avenues of further exploration. These results do not only have important implications for the theoretical understanding involving the mechanisms of network ties and social interactions but may also suggest potential consequences for small-sized apparel manufacturers, the second goal of our research.

Table 5. Results of Hypothesized Relationship Testing

Proposed Relationships	Scale Acronyms	Theory Base	Hypothesis	Significance
			Associations	
Absorptive Capacity → New Product Development	ACSCA→NPDSCA	Knowledge Based View	H1	Supported
Social Interaction → New Product Development	SISCA→NPDSCA	Social Capital	H2	Supported
Knowledge Acquisition → New Product Development	KASCA→NPDSCA	Knowledge Based View	H3	Supported
Network Ties→ New Product Development	NTSCA→NPDSCA	Social Capital	H4	Supported
			Mediation	
Absorptive Capacity → Knowledge Acquisition → New Product Development	ACSCA → KASCA → NPDSCA	Combination	H5a	Supported
Social Interaction → Knowledge Acquisition → New Product Development	SISCA → KASCA → NPDSCA	Combination	H5b	Supported

Proposed Relationships	Scale Acronyms	Theory Base	Hypothesis	Significance
Absorptive Capacity → Network Ties → New Product Development	ACSCA → NTSCA → NPDSCA	Combination	H6a	Supported
Social Interaction → Network Ties → New Product Development	SISCA → NTSCA → NPDSCA	Combination	H6b	Supported
			Moderation	
Social Interaction moderates Absorptive Capacity → New Product Development	SISCA*ACSCA → NPDSCA	Combination	H7	Supported
Absorptive Capacity moderates Knowledge Acquisition → New Product Development	ACSCA*KASCA → NPDSCA	Knowledge Based View	H8a	Not Supported
Absorptive Capacity moderates Network Ties → New Product Development	ACSCA*NTSCA → NPDSCA	Combination	H8b	Not Supported
Social Interaction moderates Knowledge Acquisition → New Product Development	SISCA*KASCA → NPDSCA	Combination	H9a	Not Supported
Social Interaction moderates Network Ties → New Product Development	SISCA*NTSCA → NPDSCA	Social Capital	H9b	Supported

In terms of managerial implications, knowledge garnering is particularly important to small-sized firms as their time, money, and number of people are proportionally limited when compared to their larger competitors. Knowledge acquisition from external sources can avail the firm with a low-cost strategy generating a wider variety of information that helps in assessing the firm as well as its capacity for new development, reconfirming Cohen and Levinthal's (1990) and Floren's (2003) earlier work, and Xie's et al. *(*2018) and Belso-Martinez's et al. (2020) more recent work identifying dense external networks as facilitating the transmission of useful and multifaceted knowledge for innovation. Warranting further managerial consideration is the discovery of complex relationships among the antecedents in augmenting new product innovations. Findings from our research suggest an interaction effect between knowledge social interaction and absorptive capacity in their relationship with new product development. Questions remain as to what factors inhibit or enable the capacity for absorbing knowledge, and how is knowledge evaluated for potential value or ability to advance the firm. Finding an interaction effect between social interaction and network ties in their relationships with new product development also raises questions as to what forms and frequencies of interfirm social interactions leverage network ties to development of new products. These relationships also offer strategies for the sample industry sector under study.

In the context of apparel and sewn products manufacturing management, time and effort to connect via social interactions appear to hold impact on acquiring information that, if absorbable, can influence new product development. Interpreted from a practitioner's viewpoint, the results of this study show, as the textiles and apparel industries strive to innovate for survival across multiple regions of the U.S., developing external firm relationships as network ties is a strategy that is

evident in current practice. Firms in the related industries are constantly searching for information to update the technological innovations in materials and assembly while meeting quality and economic expectations of the industry and consumers. Outcomes from acquiring technology-based external information may include a more realistic appraisal of the firm's technological capabilities needed for knowledge acquisition pertaining to advancements in fiber, fabric, and production. Further, the firm may learn from amassing external knowledge what perceptions about the firm are held across the supply chain such as in sustainable practices or health and safety of workers, and with this awareness they may refine or promote the firm's reputation. Expanding external knowledge of supply chain opportunities through social interactions and network ties may also suggests joint venture opportunities for the co-development of new products or sharing of costly equipment.

Zahra and George (2002) considered informal mechanisms to be particularly useful in sharing ideas. Based upon this exploratory study of U.S. apparel manufacturers, we have found that increased levels of external social interaction and firm absorptive capacity do appear to contribute to development of new product innovations; however, their contribution is more often a direct contribution to network ties and knowledge acquisition, and thus they indirectly make contribution to new product development. This relationship is a plausible explanation of the mediation results. An alternative perspective from these findings suggests that when firm management devalues high levels of involvement in social interactions and networking or considers the participation time to inhibit a robust return on investment, opportunities for knowledge gathering may be missed and firm knowledge may be unrealized. Spender (1996) legitimates employee involvement in knowledge and learning from sources both within and outside the firm. Affording time for firm management and workers to socially interact external to the firm is thus considered a viable route to constructing economic advantages.

Though findings offer pragmatic solutions to small and medium sized business conditions, this study has its limitations and warrants further research. It is impossible to claim that we included a majority of possibilities impacting new product development for small-sized businesses. Our research was on a small sample, necessarily limiting the examination to a single mediator or moderator at a time and did not capture the complexity of potential relationships. Research should be carried out with greater response participation and with additional issues or constructs to grasp their potential influences on new product development innovations. Owing to the chosen context and sector of the industry, the research results may lack generalizability to other areas of manufacturing. Future research may focus on evaluating scale items for application to different industry sectors, varying size of businesses, and international locations or affiliations. Moreover, because of discovered findings regarding the influence of knowledge and social capital on new product development, the authors deem that a qualitative study would be useful to gain a deeper understanding of this occurrence in SME's new product development. Research based on mixed methods may provide insights as to the firm- and industry-level determinants of social interactions, and tie strengths (Granovetter, 1982) as well as the types and qualities of network configurations supporting innovation. Essential ways that horizontal relationships could provide a combination of cooperation for competitive advantages remain under-explored.

More work is needed to examine the following findings discovered with the combination of the two theoretical foundations:

1. Network ties mediated the relationship between knowledge absorptive capacity and new product development

2. Knowledge acquisition mediated the relationship between social interaction and new product development

3. Social interaction moderated the relationship between absorptive capacity and new product development.

Questions arise as to the content and frequency of social interaction that is necessary or sufficient to stimulate network tie building, and whether there is a point at which social interaction is supplementary to the established network ties. Future studies could also examine the level of firm-specific knowledge exchanged in social interactions and along network ties. As Norman (2004) indicated, too high a level may provide potential problems in highly competitive markets, and low levels or lack of sharing may reduce access to information. Barriers or obstacles that inhibit absorptive capacity as well as perceived costs associated from potential divulging of proprietary information justify examination.

We meet the overall purpose of this research by offering an analysis and discussion of how interfirm relationships, as valued firm resources, can help in the U.S. apparel manufacturing of new products. By moving beyond previous work, the results of this study indicate important findings involving mediation and moderation among concepts inherent in social capital theory and the KBV perspective. Supported hypotheses offer plausible avenues of further exploration for correcting or attenuating a number of difficulties experienced by small-sized business operators, thereby reducing recent failure rates and increasing the likelihood of business success. Future work is needed to disentangle the causal mechanisms underlying the relationships.

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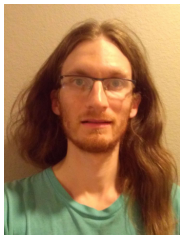

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