

A Behavioral View and Assessment of Purchasing Agents' Perception of Supply Disruption Risk

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[Abstract] The purpose of this research was directed toward an assessment of the influence of demographic and psychographic characteristics of purchasing agents on their perception of supply disruption risk in two areas, (1) a potential threat or opportunity presented by a disruption, and (2) probability of occurrence of a disruption. We drew on bounded rationality and risk perception behavioral theories to assess the relationships among perception and demographic and psychographic characteristics. The random sample was comprised of 370 middle-level purchasing managers. Hierarchical regression analyses were performed on the six study hypotheses, and four were supported. Our results show that the influence of attitude was supported at both levels of the perception and the dependent variable. The application of the theories and the findings indicate that the influence of demographic and psychographic variables on perception depends on the supply disruption situations.

[Keywords] purchasing agents, supply disruption, bounded rationality, risk perception, knowledge, experience, attitude

Introduction

The stability of business life that many corporate purchasing departments have enjoyed has been impacted by threats of resource depletion and material scarcity (Venkataraman & Pinto, 2018; Kraljic, 1983). The authors suggest that this is caused primarily by political turbulence in supply markets, intensified competition, and accelerating technological changes. According to Altay and Ramirez (2010), the frequency of supply chain disruptions is increasing with the resulting costs amplifying due to growth in supply chain density and complexity.

An increasing number of empirical research efforts have been spearheaded since the last decade, addressing corporate management pre and post responses to supply disruptions in supply chains that prior research has been largely ignored (e.g., Morris, 2019, Supply Chain 24/7, 2019; Chopra & Sodhi, 2014, 2019; Venkataraman & Pinto, 2018; Ivanov, Dolgui, Sokolov, & Ivanov, 2017; Sawik, 2014, 2016, 2017; Yang, Pan & Ballot, 2017, Ivanov, Mason, & Hartl, 2016; Wowak, Craighead & Ketchen, 2016; Ho, Zheng, Yildiz & Talluri, 2015; Basole & Bellamy, 2014; Ivanov, Sokolov, & Dolgui, 2014; Marley, Ward & Hill,

2014; Sodhi, Son and Tang, 2012; Wakolbinger & Cruz, 2011) Trkman and McCormack (2009) suggested that the risk of disruptions caused by factors internal and external to supply chains is a major concern of researchers and practitioners. Schmidt and Raman (2012) theorized that the market views disruptions caused by internal factors differently than those caused by external factors. The authors posited that disruptions caused by factors inside the firm's supply chain signal operational fragility; whereas, disruptions caused by factors outside the firm's supply chain occur at random and are not viewed as fragility.

The impact of disruptions can be negative, immediate, or delayed, and short- or long-term, depending upon the severity of the disruption and how fast a company can rebound (Schmidt & Raman, 2012; Sheffi & Rice, 2005). Disruptions may result in revenue loss and hamper productivity and capacity utilization of the purchasing organization, negatively affecting the ability to satisfy customers (Hendricks & Singhai, 2003, 2005a,b; Schmidt & Raman, 2012; Sheffi, 2005). Hence, researchers tend to indicate that disruptions may also affect shareholders' views of the firm.

In 2013, eighty-three percent of supply chain leaders had material supply chain disruptions, with the average company having three (Cecere, 2014). Ever-evolving technology and instability of world economics have supply chain managers scrambling to stay ahead of possible disruptions in flow processes on a daily basis (Heizer & Render, 2014). The authors noted that globalization, mass production, reduction in supplier base, and just-in-time customer demand are but a few of the plethora of situations that these managers address while operating among constraints that include limitations on budgets, time, manpower, and capacity (pp 437-438).

Today's supply chains are designed to be leaner, but this can have a catastrophic impact on a firm's ability to respond and continue operations if a disruption occurs (Zsidisin, Ragatz, & Melnyk, 2005). Disruptions within the chain create uncertainty and adversely impact production and transportation flow. Their impact can reduce a firm's competitive advantage, damage its reputation, and negatively impact its net worth (Sodhi, Son, & Tang, 2012), thereby reducing a firm's shares price by as much as 10 percent (Hendricks & Singhai, 2003). In such a global and dynamic economy, it is vitally important that purchasing firms identify what is essential to minimize disruptions.

Purpose of Study

The major study objectives are twofold: 1) To discern whether individual demographic and psychographic characteristics have a significant relationship with purchasing agents' perception of supply disruptions. 2) To identify and analyze the relationships of the variables in the proposed buyer perception model, if any.

Although previous research streams lend significant insights into the causes, effects, and management of supply disruption risk, minimal research has sought to understand how views of supply disruption risk are developed and how these views affect the decision-making process (Ellis, Henry, & Shockley, 2010). The purpose of this empirical research effort augments the future research directions explicitly suggested by Ellis, et al. (2010, p. 44). "Additional psychological factors, such as age, education, expertise, experience, cognitive ability, mood, recency of disruption, risk preference, problem framing, and prior success, may affect buyers' assessments of risk (Sitkin & Pablo, 1992; Sitkin & Weinghart, 1995). Study of these behavioral factors may facilitate improved design of organizational structure and infrastructure that supports the risky decision-making process."

Demographic/Psychographic Characteristic Impact Model

A demographic/psychographic characteristic impact model is proposed in Figure 1 as a graphical representation of the relationship of study variables. The major study question is as follows: Do individuals demographic/psychographic characteristics influence purchasing agents' perception of supply disruption risk? The gender (Chua, 2012), age (Agarwal, Driscoll, Gabaix, & Laibson, 2009; Scotti, 2013), education (Hitt & Tyler, 1991), and experience (Whitmarsh, 2008) were used as control variables. The variables, inclusive of knowledge (Stoutenborough, Vedlitz, & Xing, 2016; Wynne, 1991), generally and significantly influence an individual's perception and decision-making. This model is complimentary to the models proposed by Hambrick and Mason (1984) and Wiersema and Bantel (1992). The proposed model was tested to see if demographic/psychographic characteristic influence is significant, as

suggested by Ellis et al. (2010) as a priority in future supply chain disruption research efforts.



Figure 1. Demographic/Psychographic Characteristic Impact Model*

*A modification of the proposed model of Hambrick and Mason (1984). That model proposed investigating both individual psychological and demographic factors that impact strategic choices of upper echelon teams and result in organizational outcomes. Here, this study addressed the observable demographic and psychographic characteristics of mid- to lower-level purchasing agents on perceptions of supply chain disruption risk. The premise of this study is grounded in bounded rationality and risk perception theories.

Bounded Rationality Theory

The term “bounded rationality” was first introduced by Hubert Simon in the 1950s (Simon, 1955, 1956, 1957). Ibrahim, (2009) and Takahashi, (2015) penned that bounded rationality theory by discussing cognitive limitations of individuals in the areas of skills, values, and knowledge, which impact rational decision making. In its mature version, the theory deals with human limitations of information processing capacities (Fiori, 2011). Information processing stresses two constraints on individuals: (1) the limits of the information that is gathered and processed; and (2) the limits of computational capacities, which emerge when agents face situations perceived as complex. Given these limits, Fiori (2011) notes that the decisional process applies when problems requiring solutions occur.

March and Simon (1958) emphasized that when actors (organizations) receive an external input or stimulus, they react either by replicating past behaviors (routines), if they do not encounter unforeseen situations, or by following new courses of action in order to solve new and unexpected situations. The authors opined that, in the latter case, problem-solving procedures are activated, and agents treat complex problems sequentially. In particular, they reach a node (a choice point) using information collected in the previous steps, and this information, in turn, allows them to gather new information.

Companies are increasingly expected to act responsibly throughout their supply chains (Walker & Brammer, 2009; Klassen & Vereecke, 2012). Failing to act responsibly can result in significant reputational and financial performance consequences for firms (Phillips & Caldwell, 2005). Decisions to implement sustainable supply chain management (SSCM) practices are often complex, requiring substantial commitment and investment (Linton, Klassen, & Jayaraman, 2007; Pagell & Wu, 2009).

Firms may be aware of the risks associated with failing to implement SSCM practices (Walker & Jones, 2012), risks which could ultimately lead to possible supply chain disruptions; however, decisions to actively respond to such risks are often restrained by lack of information (Pagell, Zhaohuo, & Wasserman, 2010), limited resources (Seuring, Sarkis, Muller, & Rao, 2008), conflicting priorities (Brammer & Walker, 2011), and lack of know-how and capabilities (Closs Speier, & Meacham, 2011). This implies that decisions to respond to risks by implementing sound SSCM practices are boundedly rational (Roehrich & Grosvold, 2014).

Risk Perception Theory

Risk perception research is grounded in basic cognitive psychology (Slovic, Fischhoff, & Lichtenstein, 1982). Psychological research on risk perception originated in empirical studies of probability assessment,

utility assessment, and decision-making processes (Edwards, 1961). A major development in this area has been the discovery of a set of mental strategies, or heuristics, that people employ in order to make sense out of an uncertain world (Kahneman, Slovic, & Tversky, 1982).

In their investigation of factors impacting perception of supply disruption risk, Ellis et al. (2010) suggested that risk perception drives behavior and perceptual interpretations of risk guide decision-making (March & Shapira, 1987; Mitchell, 1999). How management perceives risk impacts strategy development and adoption, as well as business decisions (Dowling & Staelin, 1994; Kaplan, Szybillo, & Jacoby, 1974; Kraljic, 1983; March & Shapira, 1987; McNamara & Bromiley, 1999; Mintzberg, 1978; Qualls & Puto, 1989).

Factors affecting risk perception can be categorized as macro-, meso-, and micro-level (Inouye, 2014). The author wrote that macro-level factors, such as those from culture or the environment, are structural or institutional in nature. Employees working in an organization with a positive safety culture (emphasizing high safety standards and commitment to employee safety and health) were less likely to take risks than those working in an organization without a positive safety culture (Fleming & Buchan, 2002). Risk perception is strongly tied to how individuals behave in the workplace (NSC, 2015).

Meso-level factors affecting risk perceptions stem from peer pressure from one's workplace or community (Inouye, 2014). The author noted that stress from peers both inside and outside of the workplace can cause people to take risks that go against their better judgment. The desire to conform to group activities is strong for new employees; therefore, they may engage in taking unsafe shortcuts to complete tasks, even though those acts are high-risk (Cooper, 2003; Harding & Eiser, 1984).

Inouye (2014) suggests that micro-level factors stem from the individual. An example would be one's own knowledge of a situation. The more informed about a situation a person is, the less likely a person will take risks, while the opposite is likely for the less informed person. as in an ecological study, Huang, Han, Zhou, Gutscher, and Bi (2013) found that survey participants with a perceived higher knowledge of ecological hazards tended to have a higher risk tolerance than participants with a lower level of ecological knowledge. Venero and Montanari (2007) found that workers who perceived full knowledge of tasks to be performed were more likely to take risks. Chua (2012) notes that risk perception processes function at the micro-level. This paper will access the micro-level demographic and psychographic characteristics (factors) of purchasing agents on their perception of supply chain disruption risk.

Research Hypotheses

Study hypotheses tested are presented in Figure 2 and Table 1 below:

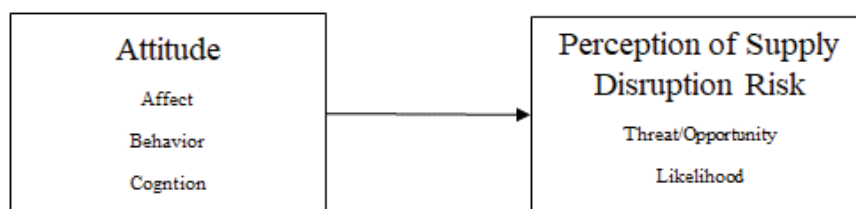


Figure 2. Hypothesized Relationship between Attitude and Perception

Table 1
Study Hypotheses

H ₁ :	<p>There is a relationship between attitude and purchasing agents' perceptions of supply distribution risk within organizations resulting from threats or opportunities posed by the disruption.</p> <p>H_{1a}: There is a relationship between the affect and purchasing agents' perceptions of supply disruption risk within organizations resulting from threats or opportunities posed by the disruption.</p> <p>H_{1b}: There is relationship between behavior and purchasing agents' perceptions of supply disruption risk within organizations resulting from threats or opportunities posed by the disruption.</p> <p>H_{1c}: There is a relationship between cognition and purchasing agents' perception of supply disruption risk within organizations resulting from threats or opportunities posed by the disruption.</p>
H ₂ :	<p>There is a relationship between attitude and purchasing agents' perception of supply disruption risk within organizations pertaining to the likelihood of the occurrence of a disruption.</p> <p>H_{2a}: There is a relationship between affect and purchasing agents' perceptions of supply disruption risk within organizations pertaining to the likelihood of the occurrence of a disruption.</p> <p>H_{2b}: There's a relationship between behavior and purchasing agents' perceptions of supply disruption risk within organizations pertaining to likelihood of occurrence of a disruption.</p> <p>H_{2c}: There's a relationship between cognition influences and purchasing agents' perceptions of supply disruption risk within organizations pertaining to the <u>likelihood of the occurrence of a disruption.</u></p>

A proposed direct path relationship between attitude and perception of supply disruption risk as it pertains to potential threats or opportunities presented by the supply disruption was depicted as Hypothesis 1 (H₁). A proposed direct relationship between attitude and perception of supply disruption risk as it pertains to the likelihood of occurrence of a supply disruption was depicted as Hypothesis 2 (H₂).

Method

Research Design and Study Instrument

A computerized, self-reported structured questionnaire was used to gather data from the targeted purchase managers. The questionnaire was delivered electronically to individuals through Qualtrics. Each purchasing manager was invited to participate in the survey. It has been well documented in the management literature that electronic surveys are effective research data collection methods that typically overcome the time and cost constraints of traditional mail surveys (Williams, 2012; Croteau, Dyer, & Miguel, 2010; Smith, 2002; MacElroy, 2000). In a side-by-side comparison of online research and mail surveys, Smith's (2002) study revealed that online research data collected were of the same quality as that of using mail surveys at one-eighth the time and cost.

A respondent's participation in the survey was fully voluntary, and he/she had an opportunity to refuse to answer any part of the survey instrument questions or participate in the survey. The questionnaires were digitally recorded, put on a storage device and monitored by the researcher in a secured area.

The Sample

The study sample was comprised of full-time purchasing agents in mid-level managerial positions (manager, supervisor, director, etc.). A total of 1,406 surveys were electronically distributed online through Qualtrics to the random sample. There were 142 (10.1%) respondents who did not start the survey. Another 894 (63.6%) respondents were disqualified because they either lived outside the United States, did not meet the managerial qualifications, or were underage. No qualified respondents who started the survey failed to complete it. There were 370 (26.3%) qualified respondents who completed the survey. The sample respondents represented diverse industries and corporations dispersed throughout the continental United States.

Middle managers are usually senior (or semi-executive) in status and have a respective salary and a package of benefits (Dance, 2011). A primary responsibility of a middle-level manager is to implement a strategy, created by the executive level, in the most efficient way possible. The duties of a middle-level purchasing manager include seeking and partnering with reliable vendors and suppliers, crafting negotiation strategies and closing deals with optimal terms with suppliers and vendors, and assessing, managing, and mitigating risks of supply disruption. These duties are performed in an effective working environment by leading subordinates through the work process to ensure organizational requirements are met (Zhang, Tsui, Song, Li, & Jia, 2008).

A pilot study was conducted to check the validity of the sample and the questionnaire that was used. Through the pilot study, it was found that the questionnaire would produce statistically significant results. The sample size for the pilot study was 59 and had a response rate of 9.45%

Exploratory factor analysis for the Big Five Personality scale used to measure the Attitude construct, yielding a KMO of .574. Hair, Black, Babin, and Anderson (2010) suggest that the KMO should be .70 or higher. The lower score in this case can be attributed to a low sample size, as well as the fact that the construct is subjective and psychological. The Bartlett test signified that the subsequent factors were significant.

The reliability analysis yielded Cronbach's alphas of .877 for Affect, .821 for Behavior, and .800 for Cognition, respectively. Cronbach's alphas should be greater than .70 for a factor to be deemed as significant (Hair et al., 2010). All factors were deemed significant. The cutoff score used for factor loading was .30; however, only two scores were loaded below .40. Those were .386 (Affect) and .334 (Behavior).

Exploratory factor analysis was conducted for the Knowledge construct to test item reliability, even though there was only one factor yielding a KMO of .732. The Bartlett test was also significant. The reliability analysis yielded a Cronbach alpha of .902. Both the Big Five Personality scale and the Knowledge scale were deemed valid and reliable for data collection purposes.

Analysis and Results

Statistical Analysis

Factor analysis was performed on the results of the 44-question Big Five Personality scale used to measure the Attitude construct. The procedure assigned the questions to the appropriate Attitude sub-constructs (Affect, Behavior, and Cognition). The purpose of this study was to understand whether demographic and psychographic factors influence purchasing agents' perceptions of supply disruption risk. The results indicate that certain factors are important and, indeed, significantly influence perceptions of supply disruption risk, while others do not.

Validity and Reliability

The main objectives of factor analysis are to analyze the variables that are formed into factors and to examine how well each of the variables loads to the factor. The loadings are measured on a scale from -1.0 to 1.0. Hair et al. (2010) cautioned that loadings exceeding $\pm .70$ are considered indicative of a

well-defined structure, and the goal of any factor analysis. The KMO is the common measure used to analyze the significance of factor analysis. The factor analysis produced a KMO value of .937. The analysis results indicated that 40 of the 44 factor loadings, or 90.9%, were greater than .50 and considered significant (Hair et al., 2010). Thirty-four of the loadings, or 77.3%, were between .60 and .90, with 16 of the 34, or 36.4%, loading between .70 and .90. All the variables were kept in the study and validated through reliability analysis.

Testing of Hypotheses

Table 1 summarizes the findings of the tested hypotheses. The assertion of Hypothesis 1a is that there is a relationship between affect and purchasing agents' perceptions of supply disruption risk within organizations resulting from threats or opportunities posed by the disruption. The results of hierarchical multiple regression reveal that the linear combination of the independent variable is not significantly related to the outcome variable, threats, or opportunities posed by supply disruption ($\Delta F(1,358) = 2.334$; $p = .127$; $R^2 = .187$). The $\Delta R^2 = .005$ and indicates that 0.5% of the variance in the dependent variable can be accounted for by how purchasing agents feel about the supply disruption threats or opportunities presented. The relationship between the independent variable and the dependent variable is negative, however, purchasing agents feelings are insignificant ($\beta = -0.094$; $t = -1.528$; $p < .127$). There is no support for Hypothesis 1a.

Table 1
Summary Findings of Tested Hypotheses

Hypotheses	Findings
H1a: There is a relationship between affect and purchasing agents' perceptions of supply disruption risk within organizations resulting from threats or opportunities posed by the disruption.	Not Supported; Insignificant negative relationship found $\beta = -.094$, $p < .127$
H1b: There is a relationship between behavior and purchasing agents' perceptions of supply disruption risk within organizations resulting from threats or opportunities posed by the disruption	Supported; Significant positive relationship found $\beta = .330$, $p < .001$
H1c: There is a relationship between cognition and purchasing agents' perceptions of supply disruption risk within organizations resulting from threats or opportunities posed by the disruption	Supported; Significant negative relationship found $\beta = -.116$, $p < .016$
H2a: There is a relationship between affect and purchasing agents' perceptions of supply disruption risk within organizations pertaining to likelihood of a disruption	Supported; Significant positive relationship found $\beta = .119$, $p < .038$
H2b: There is a relationship between behavior and purchasing agents' perceptions of supply disruption risk within organizations pertaining to likelihood of a disruption	Supported; Significant positive relationship found $\beta = .195$, $p < .001$
H2c: There is a relationship between cognition and purchasing agents' perceptions of supply disruption risk within organizations pertaining to likelihood of a disruption	Not Supported; Insignificant negative relationship found $\beta = -.038$, $p < .402$

It is the prevision of Hypothesis 1b that behavior is related to purchasing agents' perceptions of supply disruption risk within organizations resulting from threats or opportunities posed by the disruption. The data analysis revealed the existence of an extremely positive relationship ($\Delta F(1,358) = 38.579, p < .001, R^2 = .261$). $\Delta R^2 = .080$. How purchasing agents behave accounts for 8% of the variance in threats or opportunities posed by supply disruption; however, their behavior is significant ($\beta = .330, p < .001$). Therefore, there is support for Hypothesis 1b.

Hypotheses 1c hypothesized a relationship between cognition and purchasing agents' perceptions of supply disruption risk within organizations resulting from threats or opportunities posed by the disruption. The data analysis revealed the existence of a significant negative relationship ($\Delta F(1,358) = 5.888, p = .016, R^2 = .195$). $\Delta R^2 = .013$. ($\beta = -.116, p < .016$). Purchasing agents' thought process accounts for 1.3% of the variance in threats or opportunities posed by supply disruption; their thought process is significant. Therefore, there is support for Hypothesis 1c.

Hypothesis 2a predicted that there is a relationship between affect and purchasing agents' perceptions of supply disruption risk within organizations pertaining to likelihood of a disruption. The hierarchical regression analysis revealed a significant positive relationship. $\Delta F(1,358) = 4.323, p = .038, R^2 = .187$. $\Delta R^2 = .009$. Feelings account for 0.9% of the variance in the dependent variable; however, their feelings are significant. Therefore, Hypothesis 2a is supported.

Hypothesis 2b supposed that there is a relationship between behavior and purchasing agents' perceptions of supply disruption risk within organizations pertaining to the likelihood of a disruption. Analysis revealed an extremely significant positive relationship existed. ($\beta = .195, p < .001$). $\Delta F(1,358) = 14.534, p < .001, R^2 = .313$. $\Delta R^2 = .028$. Purchasing agents' behavior accounts for 2.8% of the variance in the dependent variable; however, that behavior is significant. Therefore, Hypothesis 2b is supported.

Hypothesis 2c purported that there is a relationship between behavior and purchasing agents' perceptions of supply disruption risk within organizations pertaining to the likelihood of a disruption. Analysis revealed an insignificant negative relationship existed. $\beta = -.038, p < .402$. $\Delta F(1,358) = .704, p = .402, R^2 = .287$. $\Delta R^2 = .001$. Purchasing agents thought process accounts for 0.1% of the variance in the dependent variable; however, that thought process is insignificant. Therefore, Hypothesis 2c is not supported.

Table 2 summarizes the results of analyses of aggregate Hypotheses 1 and 2. Hypothesis 1 purported that there is a relationship between the aggregate variable Attitude and purchasing agents' perceptions of supply disruption risk within organizations resulting from threats or opportunities posed by supply disruption. Analysis revealed an insignificant positive relationship existed. $\beta = .128, p < .118$. $\Delta F(1,358) = 2.452, p = .118, R^2 = .195$. $\Delta R^2 = .006$. The aggregate Attitude accounts for 0.6% of the variance in the model. Therefore, aggregate Hypothesis 1 is not supported.

Hypothesis 2 purported that there is a relationship between Attitude and purchasing agents' perceptions of supply disruption risk within organizations pertaining to the likelihood of a disruption. Analysis revealed a very significant positive relationship existed. $\beta = .231, p < .001$. $\Delta F(1,358) = 13.225, p < .001, R^2 = .311$. $\Delta R^2 = .025$. Attitude accounted for 2.5% of the variance in the dependent variable. Therefore, aggregate Hypothesis 2 is supported.

Table 2
Summary Findings of Tested Aggregate Hypotheses

Aggregate Hypotheses	Findings
H1: There is a relationship between attitude and purchasing agents' perceptions of supply disruption risk within organizations resulting from threats or opportunities posed by the disruption.	Not Supported; Insignificant positive relationship found $\beta = .128$, $p < .118$
H2: There is a relationship between attitude and purchasing agents' perceptions of supply disruption risk within organizations pertaining to likelihood of a disruption	Supported; Extremely significant positive relationship found $\beta = .231$, $p < .001$

Study Limitations and Future Research Directions

Although bounded rationality and risk perception theories underpin this study, other models could empirically test or add additional dimensions, such as risky decision-making theory, transaction cost economic (TCE) theory, and resource dependence theory (RDT). The latter two theories were used to identify four salient-attributes of the supply environment that affect representation of supply disruption risk: technological uncertainty, market thinness, item customization, and item importance (Ellis et al., 2010, p. 35). The authors assessed the influence of extant factors in the market on the perception of supply disruption risk. A study combining the factors in Ellis et al. (2010) and demographic and psychographic factors assessed in this study could be performed to identify other significantly factors that may influence purchasing agents' perceptions.

Data collection techniques, inclusive of self-reported data surveys, such as supervisors and employees' evaluations of purchasing agent's perceptions of supply disruption risks for a comparative analysis, should be considered a research priority. Perceptions of supply disruption risks should be assessed of purchasing managers at lower and executive levels of the organizational hierarchy for a comparative analysis with middle management purchasing managers. Additionally, research should be directed toward a cross-cultural international comparative analysis of purchasing agent's perceptions of supply disruption risks.

Conclusion

Although empirical support was provided for the major study question posed: Do individual demographic and psychographic characteristics influence purchasing agents' perception of supply disruptions? Two of the study hypotheses were not supported. There was a significant relationship found between the aggregate attitude variable itself and purchasing agents' perceptions of supply disruption risk within organizations pertaining to the likelihood of an occurrence of a disruption. Hence, the statistical results of the study revealed that Affect, Behavior, and Cognition might have a significant influence on perception in various aspects of decision-making depending upon the situation.

Lack of support of a relationship between the aggregate attitude variable and the dependent variable at the threat or opportunity level and support at the likelihood of occurrence level suggests that purchasing agents are more concerned with whether a disruption will occur rather than if it will pose a threat to or opportunity for their organizations.

Supply chain disruptions are occurring at their highest rate in three years, due mainly to natural disasters, and continue to grow at an alarming rate (MH&L, 2018). In the United States, disruptions reportedly increased by 30 percent in 2017 (Loew, 2018). With the ever-increasing likelihood of supply disruptions, organizations must focus on hiring managers in strategic

positions along the supply chain that possess the characteristics that assist in reducing the risks of occurrence of disruptions.

While our study has important implications, limitations must be delineated with respect to research design and sample composition. The questionnaire delivered to the sample respondents to capture our perceptual measures completely relied on self-reported responses and lent itself to self-reporting biases. A suggested data collection technique could measure perceptions based on performance evaluation rather than the purchasing agents' own perceptions. Although the purchasing agents' represented diverse organizations and different geographical areas, generalizability must be cautiously interpreted. The sample was comprised of respondents mainly from the Northeast and Southeast (49.2%) and was entirely middle management purchase agents, exclusive of executive level managers. Also, sample purchasing agent respondents represented organizations within the United States only.

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