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The role of the buyer's dependence in the innovation-adaptability relationship: Does culture matter?

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The purpose of this study is to assess the effect of supply chain innovation (SCI) on firms' adaptability, incorporating the moderating influences of buyer's dependence on its key suppliers and the national culture. Survey data was analyzed using hierarchical multiple regression analysis. The results confirm the role of SCI as a driver of adaptability in spite of cultural differences. Nevertheless, the findings reveal a moderated moderation effect of buyer's dependence and the individualism-collectivism dimension of culture on the innovation-adaptability relationship. In collectivist societies, buyers' dependence enhanced the impact of SCI on adaptability. However, the innovation impact on adaptability was weakened under conditions of high buyer's dependence in relatively individualistic societies. The findings emphasize the importance of adopting culturally appropriate supplier relationship management. The insights provided by the study are valuable to all firms engaging in inter-organizational relationships that transcend national boundaries, and of greater value to subsidiaries operating in countries characterized by different cultural values than their holding companies. The inclusion of data from a less researched African country, Sudan, enriches the literature and provides relevant knowledge.

Keywords: adaptability, buyer-supplier relationship, culture, innovation

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Introduction

Managing supply chains (SC) is one area of business management that is greatly affected by the turbulence in the business environment that we witness nowadays. The fact that the business landscape is rapidly changing places tremendous pressure on firms to find novel ways to survive and improve their competitiveness. Accordingly, the focus of SC managers has shifted from seeking efficiency to seeking adaptability in SCs (Christopher & Holweg 2011), and adaptable SCs have emerged as a powerful dynamic capability (Aslam et al. 2018) that can generate and sustain competitive advantage (Feizabadi et al. 2019, Kwak et al. 2018). In their pursuit, firms continuously attempt to streamline processes, upgrade technologies, and adopt several practices to facilitate the adaptability goal. Although innovations within the SC can tackle typical problems such as low service levels, long lead-times, or high SC costs (Stentoft & Rajkumar 2018), their beneficial impacts can extend to cover more significant issues such as managing

turbulence in the environment (Hamel & Valikangas 2003). Hence, supply chain innovation (SCI) can be viewed as a competency that leads to building vital adapting capabilities (Teece 2007) and is, therefore, receiving more attention both by academicians and managers.

As firms strive to enhance their SC capabilities, managing the buyer-supplier relationships may impose further challenges. The power dynamics of the buyer-supplier relationship can often result in situations where the dependence is not mutual, and one party has more power over the resources and thereby becomes more dominant (Blois 2010). Several negative consequences have been linked to such asymmetric dependence, including the emergence of opportunistic behaviors (Hawkins et al., 2008). However, some scholars (e.g. Chen et al. 2002) argue that the occurrence of these adverse effects is not a foregone conclusion and can be determined by prior conditioning of culture.

Bearing in mind the possible implications for theory and practice, we believe a cross-cultural examination of the effects of SCI and buyer's dependence (BD) on supply chain adaptability (SCA) would yield fruitful outcomes. Studies utilizing data from African developing countries are sparse, despite the significance of the relevant knowledge gained from such studies to policy development and practice. In examining cross-cultural differences in the effects of SCI and BD on SCA, we have chosen Japan and Sudan because of their relatively contrasting societal structures. The Japanese culture is characterized by high collectivism (Hofstede et al. 2010) compared to Sudan, which can be seen as an individualistic society (Mansour et al. 2019). The question raised in this regard is, does the BD on suppliers affect the relationship between innovation and adaptability in SCs differently for individualistic nations compared to collectivistic ones? In this study, we investigate this question by examining the effect of SCI on developing adaptable SCs, and the moderating role of BD in two culturally different countries, Japan and Sudan. The next section discusses the theoretical underpinning of the research constructs, followed by statements of the research hypotheses. The analysis method and results are then presented. We finally conclude with a discussion of the research findings, their implications, and future research directions.

Theoretical Foundations and Hypotheses Development

In a business world that is increasingly dynamic and competitive, innovation plays a critical role in an organization's capacity to adapt and grow (Hamel & Valikangas 2003). One particular area that is affected by many sources of variability in the environment, and thus is especially impacted by innovation, is the

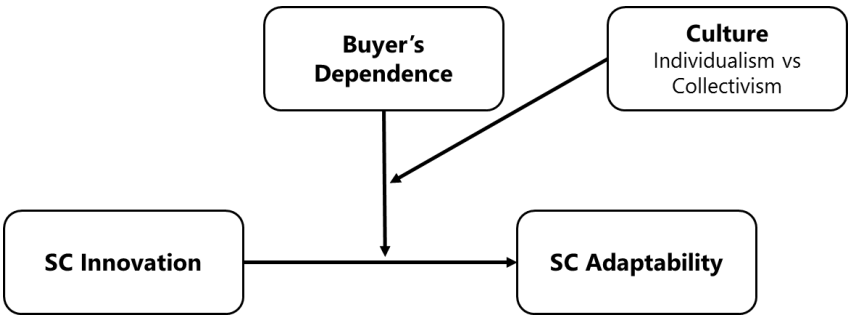

Figure 1. Study's Framework
Source: the authors

Management of the SCs. Innovation in SCs involves the creative exploitation of intrinsic development opportunities of supply chain management (SCM) by combining advancement in relevant technologies

with improved marketing and logistics processes to achieve efficient operations and effective customer service (Arlbjørn et al. 2011, Hyll & Pippel 2016). Figure 1 illustrates the model of this study.

Responding to short-term changes in the market, such as shifts in demand and supply, requires a firm to have an agile SC (Eckstein et al., 2015). However, the ability to anticipate and accommodate long-term market shifts calls for SC *adaptability*, a dynamic SC capability defined as the ability to "adjust SC's design to meet structural shifts in markets; [and] modify supply network to strategies, products, and technologies." (Lee 2004, p 4). SCA has been receiving much attention in the recent academic discussions (e.g. Erhun et al. 2020, Feizabadi et al. 2019, Gligor et al. 2020, Marin-Garcia et al. 2018), as it is proposed to be a vital key to a sustainable competitive advantage.

Innovation and Adaptability in Supply Chains

Marin-Garcia, Alfalla-Luque and Machuca (2018) defined three main dimensions of SC adaptability: the ability to change SC processes (organizational design), the ability to introduce new technology to processes and information systems (use of technology), and the ability to detect trends and changes in the market (market knowledge). All three dimension are intricately connected with the concept of SCI, as process innovation and technology innovation are the considered the two pillars of SCI (Arlbjørn et al. 2011, Kwak et al. 2018). When firms renovate their SC processes to be more agile and adaptive, their sensitivity to changes in the market and their ability to respond to these changes improves rapidly and efficiently (Marin-Garcia et al. 2018).

Extant research proposed that innovative industry 4.0 technologies can improve innovation capabilities within SCs (Gunasekaran et al. 2018, Li & Li 2017, Rialti et al. 2019). The use of big data analytics in the routinization of processes, for instance, ensures the adaptability of these processes to different situations (Gunasekaran et al. 2018) and thus improves the overall adaptability of the SC (Wamba et al. 2020). The efficient exchange of information with several SC partners enabled by big data analytics (Tan et al. 2015) can allow for real-time response, enhancing the SC visibility. The internet of things (IoT) can also be used to create "sophisticated integration of data, resources, activities, and processes across departments and supply chain members" (Li & Li 2017, p 83). As a result, the technical sophistication and higher levels of innovation allow firms for increased cooperation and integration with their SC partners, and more success in managing changes and uncertainties.

Recently, an increasing number of studies have applied the well-established dynamic capabilities theory into the SCM field (Aslam et al. 2018, Gupta et al. 2020, Kareem & Kummitha 2020, Sessu et al. 2020). The dynamic capabilities theory developed by Teece, Pisano, and Shuen (1997) states that firms must pursue 'appropriately adapting, integrating and reconfiguring internal and external organizational skills, resources, and functional competencies to match the requirements of a changing environment' (Teece et al. 1997, p. 515). Defee and Fugate (2010) extended this view beyond the traditional single-firm perspective to incorporate multiple organizations in the SC. By developing the concept of dynamic supply chain capabilities (DSCCS), the authors argued that firms in a SC should use *knowledge accessing* to reduce redundancies and utilize existing capabilities more productively, as well as *co-evolving* to facilitate the joint development of new capabilities. Consistent with this strategy paradigm, SCA is considered a dynamic capability (Aslam et al. 2018) that results from the firm's ability to reconfigure firm-level and SC-level resources (Dubey et al. 2018, Eckstein et al. 2015). Additionally, SCI can be perceived as an internal competency that can drive adaptability in the SC (Teece et al. 1997).

Thus, we propose to test the following hypotheses:

H1. SCI has a positive effect on SCA in Japan.
H2. SCI has a positive effect on SCA in Sudan.

The Role of the Buyer's Dependence

Two well-known theories constitute the theoretical foundations of research on dependence: the power-dependence view of Emerson (1962) and the resource-dependence view of Pfeffer and Salancik (1978). These theories primarily state that, as organizations strive to acquire the resources necessary to run their operations, dependence and power dynamics will eventually emerge in the inter-organizational relationships. Generally, dependence is defined as the "focal party's need to maintain its relationship with an exchange partner in order to achieve its desired goals" (Scheer et al. 2015, p 700). Balanced levels of dependence from the buyer's and the supplier's sides enhance the stability of the relationship (Muthusamy & White 2006) and increase the depth of their economic interactions (Gulati & Sytch 2007). In practice, however, it is not uncommon for dependence to be asymmetric where one partner dominates the exchange (Blois 2010)

Asymmetric dependence occurs when one party possesses and holds control over critical assets (Emerson 1962), leaving the other party in a less-powered position. In this study, we focus on the dependence from the buyer's side, i.e., the buyer's dependence on the supplier. From a buyer's perspective, dependence on the supplier emerges as a result of several factors. A widely acknowledged source of buyer's dependence is the unbalanced distribution of complementary resources and capabilities between the buyer and supplier. Schmitz, Schweiger and Daft (2016) developed a model describing the dynamics leading to buyer's dependence on the supplier and the possible lock-in situation in buyer-supplier relationships. According to this model, the supplier's competent and performance along with common progress and perception of a positive collaboration leads to the creation of a tying effect. As the relationship matures and relationship-specific investments are made, the risk aversion tendency and financial limitations of the buyer further develops dependency on the supplier. At a final stage, some buyers enter into a lock-in state with their suppliers due to the high relational and financial sunk costs which represents barriers to ending the relationship.

The discussion about the possible consequences of dependence asymmetry is ongoing, with extant literature presenting mixed results regarding the merits and demerits of such conditions (Kim & Fortado 2020). Primarily, the mere presence of asymmetric positions in buyer-supplier relationships was associated with instability and conflict (Mentzer et al. 2000), resulting in negative impacts on the levels of strategic and operational coordination, integration, and knowledge sharing between firms in the SC (Michalski et al. 2017). Recent literature has discussed additional negative consequences of buyer's dependence. According to Yalcin et al. (2018), the increased dependency of the buyer on the supplier due to the loss of buyer's critical purchasing and inventory management skills when using vendor-managed inventory (VMI) was found to negatively affect the trust level in the buyer-supplier relationship and eventually hurt the overall SC performance. Huo et al. (2019) found that buyer's dependence on the supplier triggered the latter's use of coercive and non-coercive power. Other adverse consequences of buyer's dependence include buyer's vulnerability and supplier's reduced willingness to compromise (Griffith et al. 2017).

Authors who cautioned against asymmetric dependence justified their arguments by positioning opportunism and the exploitation of the weaker party as potential risks. However, in actual business relationships, the dominant party does not necessarily exploit the dependent one. As discussed by Gaski (1984), exercised and unexercised power plays a vital role in determining the extent to which the negative consequences are expected in an asymmetric dependence. Moreover, several mechanisms are used to mitigate the adverse effects of dependence asymmetry. For example, Eckerd and Sweeny (2018) found that exchange relationships with a highly dependent partner would lead towards the use of contractual governance, as explicit contracts provide safeguards for both parties in the face of exchange hazards.

Interestingly, some scholars argued that BD would be advantageous in specific scenarios. For instance, Terpend and Krause (2015) proposed high BD as beneficial to the relationship as it will trigger more commitment and cooperation from the buyer's side, resulting in increased motivation, higher

performance from the supplier, and an overall successful relationship. Teryokhin and Hannås (2018) had also acknowledged the advantage of high BD. According to their study, the supplier-specific investment in inter-organizational information systems (IOS) improved sharing of sensitive strategic information only when the buyer was dependent on the supplier. They justify this result by explaining that high dependency relaxes the problem of opportunistic behavior caused by supplier-specific investment, and forces both parties to share the sensitive strategic business information.

From the above discussion, we can conclude that adverse outcomes resulting from asymmetric dependence can hurt the dependent firm's performance, while advantages from such relationships will boost its performance. If this is the case, then innovative practices initiated by the firm targeting improved adaptability will also be affected. Particularly, we propose that BD moderates the relationship between innovation and adaptability. However, if BD clearly holds mixed impacts that are primarily dependent upon the opportunistic propensity and behaviors of the dominant party, what determines whether or not this dominant party will exercise its power and exploit the weaker party? To address this question, we propose *culture* as a moderating factor, which influences the effect of the BD on the relationship between innovation and adaptability in SCs.

The Role of Culture

The social norms and the institutional and structural settings of a country play a vital role in shaping the business environment. In today's interconnected business landscape, firms must devote a considerable amount of time and effort to understand the cultural backgrounds affecting their business transactions with their respected partners. One of the most frequently used frameworks addressing the cultural differences across nations is the seminal work of Hofstede (1980). Hofstede defined national culture as "the collective programming of the mind acquired by growing up in a particular country" (Hofstede et al. 2010, p 520). This prior conditioning of culture shapes the attitudes of the group members regarding many aspects of life, including how they conduct business, and produces relatively stable values (Rokeach 1973) that are systematically different across nations (Hofstede 1980).

The four basic dimensions of national culture defined by Hofstede are power distance, individualism, uncertainty avoidance, and masculinity. In assessing the impact of cultural differences in this study, we believe that the individualism vs. collectivism dimension is the most relevant, without invalidating the roles of the other dimensions. Individualism refers to the degree to which people in a society are integrated into groups (Hofstede et al. 2010). In individualist societies, people seek their own self-interests, as opposed to the collectivist ones, where the interest of the group prevails over the interest of the individual. When applying the cultural dimension of individualism at the firm level, the buying firms can view their suppliers as part of the group, especially in conditions of high dependence (Ketkar et al. 2012).

Although opportunism is considered commonplace behavior (Maitland et al. 1985), several scholars have linked the opportunistic propensity and behaviors to prior cultural conditioning. Williamson (1993), one of the pioneer scholars who defined and discussed the concept of opportunism, has widely acknowledged that culture affects opportunism. Chen et al. (2002) examined how the opportunistic propensity of an economic actor is affected by one's cultural prior conditioning of individualism-collectivism, revealing that individualists have a higher opportunistic propensity in intra-group transactions. This might be attributed to the fact that collectivistic values, such as commitment, cooperation, and respect for authority, usually serve as self-regulating forces against opportunism (McGregor 1960, Miner 1980).

Relational norms generally refer to shared values and bilateral expectations between exchange partners about what constitutes appropriate or inappropriate behavior in their relationship (Heide & John 1990). Previous research identified several norms that structure and govern exchange relationships,

including flexibility and solidarity. Flexibility refers to the shared expectation that each partner will be willing, in good faith, to change the original terms of the contract to account for the unanticipated changes. Similarly, solidarity refers to shared expectations that each partner will behave in a manner that benefits their collective instead of individual interests (Heide & John 1990). Collectivist cultures, as they promote group values and seek collective interests (Doney et al. 1998), generally exhibit higher relational norms than individualist cultures. Under high relational norms, dependence and opportunism will be inversely related (Joshi & Arnold 1997). Consequently, relational norms act as a relational mechanism that governs the buyer-supplier relationship and improves relationship performance (Liu et al. 2009).

Rokkan et al. (2003) discussed how the expectation of a long-term relationship and the norm of solidarity, values that prevail in collectivist nations, could create a bonding effect leading to decreased opportunism. A recent study by Yang et al. (2020) confirmed that, under certain aspects of culture, the negative effects of resource and information asymmetry can be mitigated. *Guanxi*, a special type of Chinese social capital characterized by favor, trust, and interdependence, was found to decrease the direct effect of dependence asymmetry on opportunism. Thus, the authors advocated the use of such cultural aspects as risk management tools that can be used to reduce partner's opportunism in R&D collaborations.

Based on the above reasoning, we propose that, in individualist countries, the buying firms will suffer from the traditional adverse consequences of dependence on suppliers. As a result, the expected positive effect of their SC innovative improvements on the adaptability will be reduced. On the other hand, we propose that the effect of collectivist values will not only reduce the adverse effects of dependence but will also reinforce the relationship between the firm's SC innovation and adaptability. Using Japan as a proxy for collectivism and Sudan for individualism, we present the following hypotheses:

H3. In Japan, the positive relationship between SCI and SCA is stronger among firms with higher levels of BD.

H4. In Sudan, the positive relationship between SCI and SCA is weaker among firms with higher levels of BD.

Methodology

Survey data was collected from Japanese and Sudanese firms. The choice of these two countries was due to their varying cultural values. Despite being 'not as collectivistic as most of [their] Asian neighbors', the Japanese people are known to have more loyalty to their companies than other Asian countries (Hofstede Insights 2020). This may indicate that the collectivistic tendency of the Japanese people is higher in the workplace than in the social and family life. As a highly homogenous society, it is expected that the same cultural values are shared across the nation despite the geographical distribution within the country. For the Sudanese society, the situation is more complicated, as the debate over the Arabic vs African ethnicity and culture of Sudan is still ongoing. The high heterogeneity in linguistic and racial origins along with the fragile political and economic situation have posed challenges on the accurate measurement of the Sudanese culture. Due to the inexistence of Sudan`s cultural values in the Hofstede`s survey or in the GLOBE Book, studies addressing the culture of Sudan have adopted conflicting measures (e.g. Azahari et al. 2019, Elamin 2019, Mansour et al. 2019, Pirju 2017). For example, one study used the Hofstede's dimension scores of Nigeria, a sub-Saharan African country, to represent the Sudanese culture (Azahari et al. 2019). Other studies (e.g. Cronjé 2006, Pirju 2017) concluded that Sudan can be included in the Arab-speaking countries category of the Hofstede's model, despite that fact that these countries were specified by Hofstede and have not included Sudan (Hofstede et al. 2010).

A recent study by Mansour et al. (2019) employed the Hofstede Value Survey Module 94 (VSM 94) as the research instrument to measure Hofstede's five cultural dimensions on a sample of 649 Sudanese

participants living in Khartoum city, the capital of Sudan. Since the data collected for our study was from Khartoum as well, we believe the cultural dimension scores obtained by Mansour et al. are the best representation of the culture of our sample.

Data Collection

Data for this study was collected via a survey instrument. An English version of the questionnaire was developed first based on relevant literature, then translated into Japanese and Arabic by native professors and doctoral students. We conducted pilot testing to ensure that questions and their translations were suitable and accurate. The procedure for data collection varied due to cultural and structural settings. In Japan, the postal service is widely used, and it is usually preferred over other types of communication, especially for business transactions. In Sudan, however, the postal service system is not as efficient, and it is not widely used. Also, Sudanese managers value face-to-face communication more than other types of communication.

In Japan, we used an address database for firms in Osaka city and a random sampling technique to develop a list of 584 firms. Covering letters, including a link and QR code to an online Japanese questionnaire version, were sent by mail to the firms. Three mails were returned due to wrong/invalid addresses. Over a three-week waiting period, 46 valid questionnaires were filled, yielding around an eight percent response rate.

In Sudan, the city of Khartoum was the target for data collection. Questionnaires were hand-delivered to 146 managers from 66 firms. A total of 134 questionnaires were retrieved. Six questionnaires were discarded due to incompleteness, yielding a response rate of 88 percent. Since the unit of analysis for this study is the firm, we reduced responses from the same firm to one using the criteria of 'the middle manager with the longest experience', resulting in 64 responses. Out of the 64 remaining firms, 29 firms were non-manufacturing, so they were also excluded from the analysis. The final sample of Sudanese companies included 35 manufacturing companies.

The analysis of the demographic information showed that half of the Japanese respondents belonged to the top management, while the majority (60%) of the Sudanese respondents belonged to the middle level of management. About 70 percent of the Japanese respondents had more than ten years of experience, while the experience of 40 percent of the Sudanese respondents ranged from five to ten years. As for the firms' characteristics, the majority (24%) of the firms in the Japanese sample were from the petroleum, chemical, and medical industries, followed by non-metallic industries (17%). The majority (43%) of the Sudanese firms were also from the petroleum, chemical, and medical, followed by a percentage of 34 from the food and beverages industry. The Japanese firms were established earlier than their Sudanese counterparts, with 85 percent of the former founded in 1980 and earlier, compared to 57 percent of the latter founded after the year 2000. Finally, for both countries, the majority of firms (76% in Japan and 57% in Sudan) were of medium size (100–999 employees).

Measures

Measures validated in previous literature were used to ensure adequate reliability and validity. All survey questions were based on a seven-point Likert scale (one= strongly disagree/ much worse, seven=strongly agree/ much better). SCA was measured using a three-item reflective construct. The items were adapted from Pu, Wang, and Chan (2020). Respondents were asked to compare to their closest competitor(s) their firms' ability to adapt its SC relationships, business priorities, and activities to respond to different changes in the market and the external environment. SCI was measured using a six-item reflective construct. The items were adapted from Kim et al. (2006), Kwak et al. (2018), and Wang and Ahmed (2004). Respondents were asked to indicate their agreement with statements reflecting their firms' level of process innovativeness and their use of advanced technologies to manage their SC processes, including advanced enterprise resource planning (ERP) systems, IoT, and artificial intelligence. Following prior studies (e.g.

Kumar et al. 1998 Sezen & Yilmaz 2007), BD was conceptualized as a reflective-formative construct composed of two dimensions: Importance (IMP) and Irreplaceability (IRP). The items were adapted from Ganesan (1994). IMP was measured using a two-item reflective construct. Respondents were asked to indicate their agreement with statements reflecting the importance of their key supplier(s) for future performance and achieving the targeted business objectives. The second dimension, IRP, was measured using a single indicator where respondents were asked to indicate the level of difficulties in replacing their key suppliers if the relationship was terminated. These two constructs (IMP and IRP) were hypothesized as formative indicators of the BD construct. In line with previous literature, the firm's age, and size (measured as the number of employees) were added as control variables. Table 1 presents the descriptive statistics and correlations among the study variables for each sub-sample (Japan and Sudan), each obtained by averaging the relevant items.

Analysis

To assess the psychometric properties—reliability and validity—of the constructs, we used the partial least squares structural equation modeling (PLS-SEM) technique using SmartPLS® 3.7.2 (Ringle et al. 2005). PLS-SEM is suitable for our model because of its ability to handle small sample sizes and handle both reflective and formative measures (Hair et al. 2019). The reliability and validity of the reflective constructs were assessed by checking the scores of outer loadings, composite reliability (CR), average variance extracted (AVE), and the Heterotrait-Monotrait (HTMT) Ratio of Correlations (Hair et al. 2019, Henseler et al. 2015).

Table 1. Descriptive Statistics and Correlations

Constructs	Japan n = 46		Sudan n = 35		1	2	3	4	5	6
	Mean	SD	Mean	SD						
1. Age	71	31	22	18	1	.36**	.14	.26	.14	.12
2. Size	767	1262	907	1677	.14	1	-.06	.22	.02	.03
3. SCA	3.46	.96	5.1	1.1	.02	-.15	1	.68**	.16	.10
4. SCI	3.5	1.1	4.9	1.3	.04	-.05	.49**	1	.35**	.23
5. IMP	5.1	1.1	5.4	1.1	-.13	-.09	.24	.34**	1	.60**
6. IRP	4.3	1.3	4.3	1.7	-.16	-.24	.34**	.42**	.21	1

**Correlation is significant at the .05 level.

Notes:

The upper-right half of the matrix shows correlations for Japan's sample, and the lower-left half of the matrix shows correlations for Sudan's sample.

The loadings of indicators were acceptable and ranged from .64 to .97 (Hair et al. 2014) (all significant at the .05 significance level). CR scores ranged from .82 to .97, exceeding the recommended level of .70 (Hair et al. 2014). Constructs also exhibited acceptable convergent validity as all AVE scores exceeded the cut-off point of .50, ranging from .66 to .84 (Hair et al. 2012). Formative constructs were evaluated based on their indicators' collinearity, and the statistical significance and relevance of the indicator weights (Hair et al. 2019). Variance inflation factor (VIF) scores were below 10, indicating no presence of a collinearity (Hair et al. 2010). We used the bootstrapping procedure to assess the significance of the formative indicators' weights. The results were significant at the .01 significance level. The HTMT correlation ratios provide strong evidence of the discriminant validity of the constructs, ranging from .11 to .78, far below the threshold of .90 (Henseler et al. 2015). Hence, these results confirm that all constructs exhibit acceptable psychometric properties.

As the data was collected from single informants, the presence of common method bias must be checked. The occurrence of a VIF greater than 3.3 is proposed as an indication that a model may be contaminated by common method bias (Kock 2015). The highest VIF score among constructs was 1.56, indicating that the model is free of common method bias.

Results

We performed hierarchical multiple regression analysis using RStudio (RStudio Team 2020) to test the hypotheses of this study. Table 2 reports the analysis results. Numbers in the brackets denote standard errors. In model 1, only control variables (firms' age and size) were included. The results show no significant effects for either Japan or Sudan samples. In model 2, the main effects of the independent variable; SCI, and the moderator, BD, were added. The first hypothesis (H1) proposed a positive impact of SCI on SCA for the Japanese firms. This hypothesis was supported by the results, as we found a positive effect of SCI on SCA (β=.63, p<.01), predicting more than 50 percent (adjusted R^2 of .50) of the variance in Japanese firms' SCA. A similar result was found for the Sudanese firms, with a positive effect of SCI on SCA (β=.32, p<.05) and an adjusted R^2 of .22, indicating that more than 20 percent of the variance in Sudanese firms' SCA can be explained by their SCI, which provide support for the second hypothesis (H2). These results (Figure 2) show the improved SC adaptability as innovation increase in both countries. In Japan, however, the effect is more pronounced.

Table 2. Analysis Results

	Dependent variable: SCA					
	Model (1)		Model (2)		Model (3)	
	Japan	Sudan	Japan	Sudan	Japan	Sudan
Firm size	0	0	0	0	0	0
	(0)	(0)	(0)	(0)	(0)	(0)
Firm age	0	0	0		0	0
	(0)	(0)	(0)	(0)	(0)	(0)
SC Innovation (SCI)			.63***	.32**	-.02	2.49**
			(.09)	(.15)	(.39)	(1.0)
Buyer's Dependence (BD)			-.09	.27	-.51*	2.33**
			(.09)	(.19)	(.26)	(.98)
SCI*BD					.13*	-.43**
					(.07)	(.20)
Constant	3.13***	5.14***	1.59***	2.17**	3.75***	-7.97
	(.35)	(.31)	(.49)	(.95)	(1.32)	(4.83)
Observations	46	35	46	35	46	35
R^2	.03	.02	.55	.31	.58	.40
ΔR^2	.03	.02	.52***	.29***	.03*	.094**
Adjusted R^2	-.01	-.04	.50	.22	.53	.30
F Statistic	.77	.37	12.49***	3.36**	11.12***	3.92***
df	2,43	2,32	4,41	4,30	5,40	5,29

*p<.1, **p<.05, ***p<.01 For alacrity, firm size and age, four-digit accuracy is omitted.

An interaction term between the independent variable and the moderator (SCI*BD) was then created, after mean centering the variables, to test the moderation hypotheses (H3 and H4). H3 stated that BD will reinforce the relationship between SC's innovation and adaptability for Japanese firms. The results confirm this statement with a positive interaction coefficient (β=.13 significant at p<.10) and an improvement in the prediction power of the model by about 3 percent (ΔR^2=.03 and F-statistic=11.12 significant at p<.10 and p<.01, respectively). This result means that higher dependence of the Japanese buying firms on their suppliers will be beneficial for these firms because it will strengthen the impact of their SCI on SCA.

In contrast, we proposed that due to cultural differences between the two countries, the presence of high BD in Sudanese firms will dampen the effect of innovation on adaptability. The moderating impact of BD on the relationship between SCI and SCA in Sudan was negative (β=-.43 significant at p<.05). The addition of the moderator raised the percentage of the explained variance in Sudanese firms' SCA from 20 to 30 percent (ΔR^2=.09 and F-statistic=3.92 significant at p<.05 and p<.01, respectively). This result demonstrates that, as the dependence of the Sudanese buying firms on their suppliers increase, their innovative SC improvements will be less effective at enhancing SC adaptability.

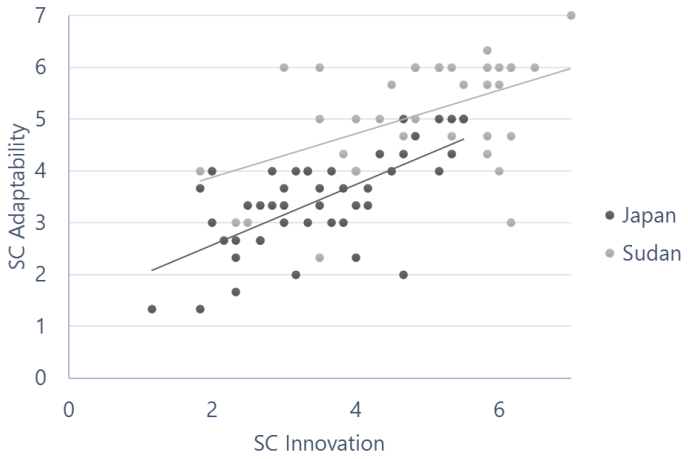

Figure 2. The Relationship between SC Innovation and SC Adaptability in Japan and Sudan
Source: the authors

To further illustrate the interaction effects, we plotted them in Figure 3 and Figure 4. In principle, as shown in Figure 3, Japanese firms with high and low levels of BD show an improvement in SCA when their level of SCI increases. However, the improvement for firms with high levels of dependence is significantly higher. Moreover, when Japanese firms have low SCI, those who are highly dependent on their suppliers have less adaptable SCs than those who are not as dependent on suppliers. However, as firms increase their SCI, the improved adaptability of firms with higher dependency surpasses that of firms with lower dependency on their suppliers.

For the Sudanese firms, illustrated in Figure 4, the situation is quite reversed. SCA is notably higher for highly dependent firms at low SCI. This advantage, however, starts to diminish as firms achieve more innovation to the point where SCA of less dependent firms exceeds that of the highly dependent ones at higher levels of SCI. Thus, we can conclude that high BD does not only hinder the positive improvements of SCI on SCA for the Sudanese firms, but it can also result in a reduced level of SCA.

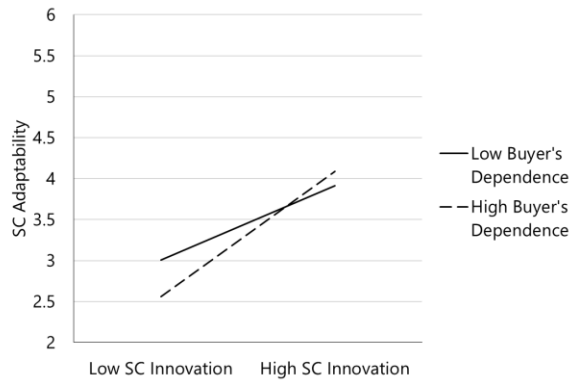

Figure 3. The Moderation Effect of Buyer's Dependence on the Relationship Between Innovation and Adaptability in Japan
Source: the authors

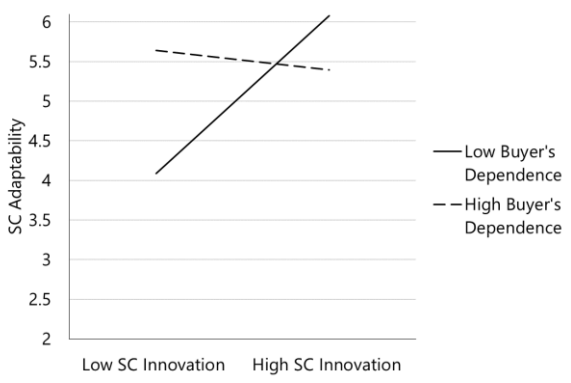

Figure 4. The Moderation Effect of Buyer's Dependence on the Relationship Between Innovation and Adaptability in Sudan
Source: the authors

Discussion

In the turbulent business environment that we witness nowadays, firms prioritize streamlining and improving their SC processes using relevant and advanced technologies to ensure quick responses to changes in the environment. As a result, the old notion of how SCs are managed is now shifting to accommodate the dynamic changes in the current environment, emphasizing building adaptability rather than efficiency. While they strive to achieve the required adaptability through SC innovation, firms' dependence on key suppliers may either hinder or help. An often-accepted assumption in the literature is that dependence on a dominant party has negative consequences for the dependent party (e.g. Huo et al. 2017), as dependence is considered the predominant construct driving opportunism (Hawkins et al. 2008). However, dependence itself may not be the cause of these negative outcomes; it is rather the exercised power and opportunistic behaviors from the dominant party that actually cause the adverse outcomes.

Our findings support previous studies which emphasized the role of innovation as driver of SC adaptability (e.g. Marin-Garcia et al. 2018, Wamba et al. 2020). Additionally, they explain how dependence of the buying firm on its suppliers, based on the individualistic-collectivistic nature of the society, can either strengthen or weaken the positive impact of innovation on adaptability. This varying moderating effect can be attributed to the dynamics of buyer-supplier relationships in collectivist vs individualist societies.

More specifically, we found that the positive effect of innovation on adaptability was reinforced in the presence of high buyer's dependence in collectivistic cultures. Due to their collectivistic nature, highly dependent buyers view their suppliers as part of their own group (Ketkar et al. 2012). This perception of unity increases the buyer's willingness to involve suppliers in innovation activities (Xiao et al. 2019), leading to more fruitful outcomes. Also, this sense of solidarity and harmony stimulate building trust and long-term orientation in buyer-supplier relationships (Cannon et al. 2010). In relationships characterized by trust and commitment, previous literature (e.g. Tangpong et al. 2010) proposed that adverse consequences of asymmetric dependency such as opportunism from the dominant party, i.e. the supplier in our context, will be mitigated. Our findings support these conclusions and reveal that, not only will negative impacts be avoided, but advantages for the dependent party could actually occur in such asymmetric relationships.

Conversely, according to our findings, higher levels of dependence from the buyer's side dampened the positive effect of innovation on adaptability in relatively individualistic cultures. The individualistic nature of the suppliers coupled by their perception of the buyer's dependence would trigger opportunistic behaviors (Chen et al. 2002, Hawkins et al. 2008) as well as the use of coercive and non-coercive powers against the dependent party (Huo et al. 2019). These relationship qualities reflect negatively on the buyers' position and impair their innovation competence and / or reduce its expected outcomes. As these buying firms strive to implement innovative process and technology improvements, their entrapment in a highly dependent relationship can further drain their resources to the point where the innovation projects intended for improving SC adaptability would lead to its deterioration.

Conclusions

The purpose of this study was to examine the impact of innovation in SC processes and technologies on the adaptability of the SC, taking into consideration how firm's dependence on its key suppliers might affect the innovation-adaptability relationship (in the cultural context). We proposed that SC innovation would lead to improvements in SC adaptability regardless of asymmetric dependence in the buyer-supplier relationships and culture. We further proposed that under conditions of high buyer's dependence on suppliers, improvements in adaptability generated by SC innovation would either be reinforced or dampened based on the individualism-collectivism dimension of culture.

Using samples from two culturally contrasting countries, we confirmed the role of innovation in building SC adaptability. In agreement with our hypotheses, we found that in collectivist societies, such as Japan, buyers' dependence enhanced the effect of innovation on adaptability. On the other hand, the innovation impact on adaptability was weakened under conditions of high buyer's dependence in relatively individualistic nations, such as Sudan. Our findings thus offer a reconciliation for the apparently contradicting extant literature on the advantages/disadvantages of asymmetric dependence in buyer-supplier relationships.

Recent research has explored various aspects of SC adaptability as a dynamic SC capability. Scholars have identified its antecedents such as Industry 4.0 technologies (Wamba et al. 2020), as well as its impacts on SC ambidexterity (Aslam et al. 2018) and operational performance (Kareem & Kummitha 2020). We add to this growing stream of literature by investigating and confirming the moderating roles of buyer-supplier relationships and culture.

Given the sparsity of studies addressing the buyer-supplier relationship management and SCI in African countries, especially Sudan, we believe this study contributes to bridging this gap by providing empirical evidence from a less researched country. We do not assume that a single cross-cultural study suffices to address these issues; instead, we merely suggest that our study be considered as one in the body of cross-cultural studies on the subject.

Implications for Managers

Understanding and addressing cultural differences is a prerequisite for the successful management of global SCs. Our findings are thus valuable to all firms engaging in inter-organizational relationships that transcend national boundaries. They assist SC managers to approach asymmetric dependence relationships powered by knowledge of their underlying cultural aspects, which allow to accurately assess and tackle their consequences. These findings are of greater value to managers of subsidiaries operating in countries characterized by different cultural values than their holding companies. They emphasize the importance of considering these differences in developing suitable procurement and supplier relationship management policies and practices.

Limitations and Future Research Directions

Countries with a complex socio-cultural fabric, such as Sudan, seldom have one dominant culture. To the best of our knowledge, only two studies (Cronjé 2006, Mansour et al. 2019) have empirically measured the Sudanese culture, and they resulted in conflicting outcomes. We thus encourage future research to bridge this gap to enable the advancement of research about Sudan.

The focus of this study was on only one dimension of culture: individualism vs collectivism. Other dimensions could be explored to provide additional insight. For example, the effectiveness of governance mechanisms aimed at reducing opportunism in outsourcing relationships was found to vary based on the *uncertainty avoidance* dimension of culture (Handley & Angst 2015). While contractual governance was more effective in low uncertainty avoidance cultures, relational governance worked better for cultures with high uncertainty avoidance. Similarly, we expect that this, and other, cultural dimensions to have varying impacts on our proposed model.

Aside from culture, other sources of heterogeneity, such as the institutional and development levels of countries, might be used as the basis of comparison. Given the complexity of the topic, we recommend future researchers to consider other theoretical perspectives. Moreover, the small size and the specific environments in which the study was conducted may limit the generalizability of the findings. The study findings can be further confirmed and/or extended by replicating it in other socio-economic contexts.

Bearing in mind the substantial declining in response rates (Stedman et al. 2019) and the associated cost, effort, and time required to achieve relatively high ones, a growing stream of literature (e.g. Fosnacht et al. 2017, Peytchev 2013, Phillips et al. 2016) is questioning the widely held assumption that lower response rates lead to biased results. For example, measures were found to reliable with response rates as low as 5 to 10 percent (Fosnacht et al. 2017, Wright 2015). In this study, the response rates in the two samples were 8 percent using mail survey in Japan, and 88 percent using face-to-face survey in Sudan. Such difference could be attributed to the survey modes as well as the country (Daikeler et al. 2020), as mail surveys are known to have much lower response rates than face-to-face interviews. Although high non-response rates does not in itself cause bias, it increases the potential for biased estimates (Massey & Tourangeau 2013). Future research could overcome the potential bias issue by replicating this study using comparable, larger datasets.

References

Arlbjørn JS, de Haas H & Munksgaard KB 2011. Exploring supply chain innovation. Logistics Research, 1(3), 3–18.

Aslam H, Blome C, Roscoe S & Azhar TM 2018. Dynamic supply chain capabilities: How market sensing, supply chain agility and adaptability affect supply chain ambidexterity. International Journal of Operations & Production Management, 38(12), 2266–2285. https://doi.org/10.1108/IJOPM-09-2017-0555

Azahari LMH, Ason M LA & Yahaya, MI 2019. A comparative analysis on cross cultural management: A case study on African culture in Brunei Darussalam. Journal of Islamic, Social, Economics and Development, 4(23), 114–126.

Blois K 2010. The legitimacy of power in business-to-business relationships. Marketing Theory, 10(2), 161–172.

Cannon JP, Doney PM, Mullen, MR & Petersen KJ 2010. Building long-term orientation in buyer-supplier relationships: The moderating role of culture. Journal of Operations Management, 28(6), 506–521. https://doi.org/10.1016/j.jom.2010.02.002

Chen CC, Peng MW & Saparito PA 2002. Individualism, collectivism, and opportunism: A cultural perspective on transaction cost economics. Journal of Management, 28(4), 567–583.

Christopher M & Holweg M 2011. Supply Chain 2.0: Managing supply chains in the era of turbulence. International Journal of Physical Distribution & Logistics Management, 41(1), 63–82.

Cronjé JC 2006. Interpreting cross-cultural blended teaching and learning along Hofstede's cultural dimensions. Proceedings of e/Merge, 12. https://www.researchgate.net/publication/228938229_Interpreting_cross-cultural_blended_teaching_and_learning_along_Hofstede's_cultural_dimensions

Daikeler J, Bošnjak M & Manfreda K 2020. Web versus other survey modes: An updated and extended meta-analysis comparing response rates. Journal of Survey Statistics and Methodology, 8(3), 513–539. https://doi.org/10.1093/jssam/smz008

Defee CC & Fugate BS 2010. Changing perspective of capabilities in the dynamic supply chain era. The International Journal of Logistics Management, 21(2), 180–206.

Doney PM, Cannon JP & Mullen MR 1998. Understanding the influence of national culture on the development of trust. Academy of Management Review, 23(3), 601–620.

Dubey R, Altay N, Gunasekaran A, Blome C, Papadopoulos T & Childe SJ 2018. Supply chain agility, adaptability and alignment: Empirical evidence from the Indian auto components industry. International Journal of Operations & Production Management, 38(1), 129–148.

Eckerd S & Sweeney K 2018. The role of dependence and information sharing on governance decisions regarding conflict. The International Journal of Logistics Management, 29(1), 409–434. https://doi.org/10.1108/IJLM-12-2016-0301

Eckstein D, Goellner M, Blome C & Henke M 2015. The performance impact of supply chain agility and supply chain adaptability: The moderating effect of product complexity. International Journal of Production Research, 53(10), 3028–3046.

Elamin N 2019. A theoretical analysis of corruption in Sudan: Causes, diagnostics, consequences, and remedies. African Journal of Political Science and International Relations, 13(2), 4–16. https://doi.org/10.5897/AJPSIR2018.1134

Emerson RM 1962. Power-dependence relations. American Sociological Review, 27(1), 31–41.

Erhun F, Kraft T & Wijnsma S 2020. Sustainable Triple-A Supply Chains. Production and Operations Management, poms.13306. https://doi.org/10.1111/poms.13306

Feizabadi J, Gligor D & Motlagh S 2019. The triple-as supply chain competitive advantage. Benchmarking: An International Journal, 26(7), 2286–2317. https://doi.org/10.1108/BIJ-10-2018-0317

Fosnacht K, Sarraf S, Howe E & Peck LK 2017. How important are high response rates for college surveys? The Review of Higher Education, 40(2), 245–265. https://doi.org/10.1353/rhe.2017.0003

Ganesan S 1994. Determinants of long-term orientation in buyer-seller relationships. Journal of Marketing, 58(2), 1–19.

Gaski JF 1984. The theory of power and conflict in channels of distribution. Journal of Marketing, 48(3), 9–29.

Gligor D, Feizabadi J, Russo I, Maloni MJ & Goldsby TJ 2020. The triple-a supply chain and strategic resources: Developing competitive advantage. International Journal of Physical Distribution & Logistics Management, 50(2), 159–190. https://doi.org/10.1108/IJPDLM-08-2019-0258

Griffith DA, Hoppner JJ, Lee HS & Schoenherr T 2017. The influence of the structure of interdependence on the response to inequity in buyer–supplier relationships. Journal of Marketing Research, 54(1), 124–137.

Gulati R & Sytch M 2007. Dependence asymmetry and joint dependence in interorganizational relationships: Effects of embeddedness on a manufacturer's performance in procurement relationships. Administrative Science Quarterly, 52(1), 32–69.

Gunasekaran A, Yusuf YY, Adeleye EO & Papadopoulos, T 2018. Agile manufacturing practices: The role of big data and business analytics with multiple case studies. International Journal of Production Research, 56(1–2), 385–397. https://doi.org/10.1080/00207543.2017.1395488

Gupta S, Modgil S, Gunasekaran A & Bag S 2020. Dynamic capabilities and institutional theories for Industry 4.0 and digital supply chain. Supply Chain Forum, 21. https://doi.org/10.1080/16258312.2020.1757369

Hair JF, Anderson RE, Babin BJ & Black WC 2010. Multivariate data analysis: A global perspective. USA: Pearson.

Hair JF, Sarstedt, M, Hopkins L, & Kuppelwieser VG 2014. Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research. European Business Review, 26(2), 106–121.

Hair J, Sarstedt M, Ringle CM & Mena JA 2012. An assessment of the use of partial least squares structural equation modeling in marketing research. Journal of the Academy of Marketing Science, 40(3), 414–433. https://doi.org/10.1007/s11747-011-0261-6

Hair JF, Risher JJ, Sarstedt M & Ringle CM 2019. When to use and how to report the results of PLS-SEM. European Business Review, 31(1), 2–24.

Hamel G & Valikangas L 2003. Why resilience matters. Harvard Business Review, 81(9), 56–57.

Handley SM & Angst CM 2015. The impact of culture on the relationship between governance and opportunism in outsourcing relationships. Strategic Management Journal, 36(9), 1412–1434. https://doi.org/10.1002/smj.2300

Hawkins TG, Wittmann CM & Beyerlein MM 2008. Antecedents and consequences of opportunism in buyer–supplier relations: Research synthesis and new frontiers. Industrial Marketing Management, 37(8), 895–909.

Heide JB & John G 1990. Alliances in industrial purchasing: The determinants of joint action in buyer-supplier relationships. Journal of Marketing Research, 27(1), 24–36.

Henseler J, Ringle CM & Sarstedt M 2015. A new criterion for assessing discriminant validity in variance-based structural equation modeling. Journal of the Academy of Marketing Science, 43(1), 115–135. https://doi.org/10.1007/s11747-014-0403-8

Hofstede G 1980. Culture and organizations. International Studies of Management & Organization, 10(4), 15–41.

Hofstede G, Hofstede GJ & Minkov M 2010. Cultures and organizations: Software of the mind; intercultural cooperation and its importance for survival. USA: McGraw-Hill.

Hofstede Insights 2020. Hofstede Insights. https://www.hofstede-insights.com/product/compare-countries

Huo B, Flynn, BB & Zhao X 2017. Supply Chain power configurations and their relationship with performance. Journal of Supply Chain Management, 53(2), 88–111. https://doi.org/10.1111/jscm.12139

Huo B, Tian, M, Tian Y & Zhang Q 2019.The dilemma of inter-organizational relationships: Dependence, use of power and their impacts on opportunism. International Journal of Operations & Production Management, 39(1), 2–23. https://doi.org/10.1108/IJOPM-07-2017-0383

Hyll W & Pippel G 2016. Types of cooperation partners as determinants of innovation failures. Technology Analysis & Strategic Management, 28(4), 462–476.

Joshi AW Arnold SJ 1997. The impact of buyer dependence on buyer opportunism in buyer–supplier relationships: The moderating role of relational norms. Psychology & Marketing, 14(8), 823–845.

Kareem MA & Kummitha HVR 2020. The impact of supply chain dynamic capabilities on operational performance. Organizacija, 53(4), 319–331. https://doi.org/10.2478/orga-2020-0021

Ketkar S, Kock N, Parente R & Verville J 2012. The impact of individualism on buyer–supplier relationship norms, trust and market performance: An analysis of data from Brazil and the USA. International Business Review, 21(5), 782–793.

Kim D, Cavusgil ST & Calantone RJ 2006. Information system innovations and supply chain management: channel relationships and firm performance. Journal of the Academy of Marketing Science, 34(1), 40–54. https://doi.org/10.1177/0092070305281619

Kim DY & Fortado B 2020. Outcomes of supply chain dependence asymmetry: A systematic review of the statistical evidence. International Journal of Production Research, 1–23. https://doi.org/10.1080/00207543.2020.1791999

Kock N 2015. Common method bias in PLS-SEM: A full collinearity assessment approach. International Journal of E-Collaboration, 11(4), 1–10. https://doi.org/10.4018/ijec.2015100101

Kumar N, Scheer LK & Steenkamp J-BE 1998. Interdependence, punitive capability, and the reciprocation of punitive actions in channel relationships. Journal of Marketing Research, 35(2), 225–235.

Kwak D-W, Seo Y-J & Mason R 2018. Investigating the relationship between supply chain innovation, risk management capabilities and competitive advantage in global supply chains. International Journal of Operations & Production Management, 38(1), 2–21. https://doi.org/10.1108/IJOPM-06-2015-0390

Lee HL 2004. The triple-a supply chain. Harvard Business Review, 82(10), 102–113.

Lee SM, Lee D & Schniederjans MJ 2011. Supply chain innovation and organizational performance in the healthcare industry. International Journal of Operations & Production Management, 31(11), 1193–1214.

Li B & Li Y 2017. Internet of things drives supply chain innovation: A research framework. International Journal of Organizational Innovation, 9(3), 71–92.

Liu Y, Luo Y & Liu T 2009. Governing buyer–supplier relationships through transactional and relational mechanisms: Evidence from China. Journal of Operations Management, 27(4), 294–309.

Maitland I, Bryson J & Van de Ven A 1985. Sociologists, economists, and opportunism. Academy of Management Review, 10(1), 59–65.

Mansour IHF, Diab DME, Shibeika AM & Mohamed HE 2019. Investigating dimensions of Sudanese national culture: A comparative outlook. International Journal of Recent Academic Research, 1(8), 445–452.

Marin-Garcia JA, Alfalla-Luque R & Machuca JAD 2018. A Triple-A supply chain measurement model: Validation and analysis. International Journal of Physical Distribution & Logistics Management, 48(10), 976–994. https://doi.org/10.1108/IJPDLM-06-2018-0233

Massey DS & Tourangeau R 2013. Where do we go from here? Nonresponse and social measurement. The ANNALS of the American Academy of Political and Social Science, 645(1), 222–236. https://doi.org/10.1177/0002716212464191

McGregor D 1960.The human side of enterprise. USA: McGraw-Hill.

Mentzer JT, Min S & Zacharia ZG 2000. The nature of interfirm partnering in supply chain management. Journal of Retailing, 76(4), 549–568. https://doi.org/10.1016/S0022-4359(00)00040-3

Michalski M, Montes-Botella JL & Piedra W 2017. Can asymmetry impact performance, collaboration and integration? An empirical study. The International Journal of Logistics Management, 28(4), 939–963. https://doi.org/10.1108/IJLM-03-2016-0084

Miner JB 1980. Theories of organizational behavior. USA: Dryden Press.

Muthusamy SK & White MA 2006. Does power sharing matter? The role of power and influence in alliance performance. Journal of Business Research, 59(7), 811–819. https://doi.org/10.1016/j.jbusres.2006.01.018

Peytchev A 2013. Consequences of Survey Nonresponse. The ANNALS of the American Academy of Political and Social Science, 645(1), 88–111. https://doi.org/10.1177/0002716212461748

Pfeffer J & Salancik, GR 1978. The External Control of Organizations: A Resource Dependence Perspective. USA: Stanford Business Books.

Phillips AW, Reddy S & Durning SJ 2016. Improving response rates and evaluating nonresponse bias in surveys: AMEE Guide No. 102. Medical Teacher, 38(3), 217–228. https://doi.org/10.3109/0142159X.2015.1105945

Pirju IS 2017. four Sudan`s cultural values–an international benchmarking analysis. Jurnalul de Studii Juridice, 12 (3–4), 75–86. https://doi.org/10.18662/jls/15

Pu X, Wang Z & Chan FT S 2020. Leveraging open e-logistic standards to achieve ambidexterity in supply chain. Journal of Computer Information Systems, 60(4), 347–358. https://doi.org/10.1080/08874417.2018.1488543

Rialti R, Marzi G, Ciappei C & Busso D 2019. Big data and dynamic capabilities: A bibliometric analysis and systematic literature review. Management Decision, 57(8), 2052–2068. https://doi.org/10.1108/MD-07-2018-0821

Ringle CM, Wende S & Will A 2005. SmartPLS (3.8.2) [Computer software]. https://www.smartpls.com/

Rokeach M 1973. The Nature of Human Values. USA: Free Press.

Rokkan AI, Heide JB & Wathne KH 2003. Specific investments in marketing relationships: expropriation and bonding effects. Journal of Marketing Research, 40(2), 210–224. https://doi.org/10.1509/jmkr.40.2.210.19223

RStudio Team 2020. https://www.R-project.org

Scheer LK, Miao CF & Palmatier RW 2015. Dependence and interdependence in marketing relationships: Meta-analytic insights. Journal of the Academy of Marketing Science, 43(6), 694–712. https://doi.org/10.1007/s11747-014-0418-1

Schmitz T, Schweiger B & Daft J 2016. The emergence of dependence and lock-in effects in buyer–supplier relationships—A buyer perspective. Industrial Marketing Management, 55, 22–34. https://doi.org/10.1016/j.indmarman.2016.02.010

Sessu A, Sjahruddin H & Santoso A 2020. The moderating effect 0f supply chain dynamic capabilities on the relationship of sustainable supply chain management practices, supply chain integration and business performance. Talent Development, 15.

Sezen B & Yilmaz C 2007. Relative effects of dependence and trust on flexibility, information exchange, and solidarity in marketing channels. Journal of Business & Industrial Marketing, 22(1), 41–51.

Stedman RC, Connelly NA, Heberlein, TA, Decker DJ & Allred SB 2019. The end of the (research) world as we know it? Understanding and coping with declining response rates to mail surveys. Society & Natural Resources, 32(10), 1139–1154. https://doi.org/10.1080/08941920.2019.1587127

Stentoft J & Rajkumar C 2018. Does supply chain innovation pay off? In A. C. Moreira, L. M. D. F. Ferreira, & R. A. Zimmermann (Eds.), Innovation and Supply Chain Management (pp. 237–256. Springer International Publishing. https://doi.org/10.1007/978-3-319-74304-2_11

Tan KH, Zhan, Y, Ji G, Ye F & Chang C 2015. Harvesting big data to enhance supply chain innovation capabilities: An analytic infrastructure based on deduction graph. International Journal of Production Economics, 165(C), 223–233. https://doi.org/10.1016/j.ijpe.2014.12.034

Tangpong C, Hung K-T & Ro YK 2010. The interaction effect of relational norms and agent cooperativeness on opportunism in buyer-supplier relationships. Journal of Operations Management, 28(5), 398–414. https://doi.org/10.1016/j.jom.2009.12.001

Teece DJ 2007. Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. Strategic Management Journal, 28(13), 1319–1350. https://doi.org/10.1002/smj.640

Teece DJ, Pisano G & Shuen A 1997. Dynamic capabilities and strategic management. Strategic Management Journal, 18(7), 509–533.

Terpend R & Krause DR 2015. Competition or cooperation? Promoting supplier performance with incentives under varying conditions of dependence. Journal of supply chain management, 51(4), 29–53. https://doi.org/10.1111/jscm.12080

Teryokhin S & Hannås G 2018. Impact of supplier-specific investments in inter-organisational information systems on strategic electronic coordination: The moderation effect of buyer dependence. Engineering Management in Production and Services, 10(1), 7–21. https://doi.org/10.1515/emj-2018-0001

Wamba SF, Dubey R, Gunasekaran A & Akter S 2020. The performance effects of big data analytics and supply chain ambidexterity: The moderating effect of environmental dynamism. International Journal of Production Economics, 222, 107498. https://doi.org/10.1016/j.ijpe.2019.09.019

Wang CL & Ahmed PK 2004. The development and validation of the organisational innovativeness construct using confirmatory factor analysis. European Journal of Innovation Management, 7(4), 303–313. https://doi.org/10.1108/14601060410565056

Williamson OE 1993. Opportunism and its critics. Managerial and Decision Economics, 14(2), 97–107. https://www.jstor.org/stable/2488006

Wright G 2015. An empirical examination of the relationship between nonresponse rate and nonresponse bias. Statistical Journal of the IAOS, 31(2), 305–315. https://doi.org/10.3233/sji-140844

Xiao C, Petkova B, Molleman E & van der Vaart T 2019. Technology uncertainty in supply chains and supplier involvement: The role of resource dependence. Supply Chain Management: An International Journal, 24(6), 697–709. https://doi.org/10.1108/SCM-10-2017-0334

Yalcin MG, Özpolat, K Schniederjans DG 2018. Post-implementation analysis: Dependence and trust in VMI context. International Journal of Physical Distribution & Logistics Management, 48(7), 724–740. https://doi.org/10.1108/IJPDLM-09-2017-0294

Yang N, Song Y, Zhang Y & Wang J 2020. Dark side of joint R&D collaborations: Dependence asymmetry and opportunism. Journal of Business & Industrial Marketing, 35(4), 741–755. https://doi.org/10.1108/JBIM-11-2018-0354

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