

# Exploring Devices for Mitigating Supply Chain Risks: an Institutional perspective

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*Abstract*— This paper offers an institutional framework for the mitigation of supply chain risks. Drawing on previous review papers in supply chain risks, institutional theory has been used as theoretical lens to develop supply chain risks management (SCRM) framework. This paper asserts that SCRM could perhaps be viewed as a profession that occupies with standard operating procedures as a set of embedded rules, and equips with normative and cultural-cognitive institutional elements. This means, certification, heuristics, and imitation could be used to mitigate supply chain risks. As the aim of the paper is to propose institutional framework for SCRM by incorporating institutional theory based arguments which is not only meaningful to the modern organizations but also applicable when they confront with the risk management challenges. Use of the institutional theory to develop a mechanism for SCRM encourages further examinations of this important topic.

**Keywords:** Supply chain management, Supply risks, Information flow, outsourcing risks

## 1. Introduction

Extant literature in supply chain management (SCM) agrees that the supply chain researchers have been putting their efforts to explain supply chain risks and to devise risk mitigation strategies. Understanding risks and devising an effective solution for this has always been challenging. Ref. [1] and [2] pointed out that the research on how and to what extent a structured supply chain risk management (SCRM) approach fosters improved agility and robustness has an enormous possibility in improving firms' performance. Although abundance of literature in several areas including economics, finance, and strategic management offers ideas on how to deal with risks, still a firm focused view on SCRM is

limited. Therefore, this paper focuses on highlighting supply chain risks and devising a special framework that perhaps assists managers in mitigating such risks.

A global supply chain executive' survey reports around two-thirds of the respondents expressed an increasing pattern of risk over the past three years, and nearly as many expect that risk will continue to rise [3]. As long as the supply chain becomes more complex through the use of global sourcing and the 'leaning-down' practices, supply chain risk increases [4]. More specifically, a progressive leaning out of inventories across the supply chain with an absolute minimum number of suppliers has increased the exposure and/or risk of supply chain breakdown in the event of a disaster affecting one of its members [5]. Furthermore, Ref. [6] refers that supply chains are getting leaner and thus there is less ability for supply chains to react in case of a disaster. Thus, it is apparent that the global outsourcing of non-core processes such as production, logistics, and information services has made the supply chains longer, and slower posing challenges to the effective SCRM practices.

The extant literature indicate, modern supply chains are threatened by two broad categories of risks, risk arising from the problem of coordinating supply and demand, and risks arising from disruptions to normal activities. A significant change has occurred in the economic society, many modern companies have been employing streamlining operations, reengineering process, integrating with partners, implementing enterprise systems, moving production to low-cost, off-shore locations, and global sourcing just to remain competitive in the market [7]. These initiatives not only brought the more efficient supply networks, but also caused these networks to become more vulnerable to various types of disruptions.

Risks posed by current complex and dynamic supply networks are the greater concerns of modern managers, they need to identify and manage risks

from a more diverse range of sources and contexts [8]. In particular, such risks can be managed through coordination or collaboration among the supply chain partners keeping intact with their profitability and continuity objectives [7]. Most of the SCRM studies have offered risk management approaches based on product, demand, supply, and information management [7]. Tang's observation on supply chains' vulnerability and the poor attention to mitigating disruption risk perhaps is a major concern of the majority of modern firms. Given such contexts, most firms recognize the importance of risk but they fail in an attempt to implement the necessary measures to mitigate these risks. Although several studies provide a list of SCRM strategies [9], strategies that focus on supply chain risks still require greater attention [10]. Our review of supply chain management literature shows existing SCRM insights still fall short in providing better measures. However, they focus on describing, understanding and predicting supply chain risks. A closer look through institutional theory could help further in mitigating supply chain risks. This paper therefore argues that the use of institutional elements could lead towards an improved supply chain risk management.

Based on institutional logic we argue that certification practice helps organizations in resolving demand and supply risks. This perhaps makes organization ready to deal with complexity of such risks. Similarly, proper use of heuristics and imitation may mitigate both process and noncompliance related risks. This paper offers a theoretical framework that can assist throughout the process of risk identification, assessment and management, however we are more focused on the risk management aspect. Firms can use this framework for both prevention and cure of supply chain risks. Mitigating supply chain disruption should initiate from a careful evaluation of all members and their connections in the supply chain. In particular, this paper describes how institutional factors (e.g., certification, heuristics, and imitation) can improve the SCRM practices of organizations. Building on supply chain risks review papers and on the normative and cultural cognitive dimensions of institutional theory, this paper proposes a supply chain risk management (SCRM) framework and propositions.

## 2. Supply chain risks (SCR)

Most SCRM literature agrees that the risk itself is associated with negative consequences of

impact [11], [12], [13], [14]. This way of pursuing risk is quite straightforward, most often fear of risks also strikes the mindset of leaders in organizations. Fear of risk could be either expected or unexpected, for example supplier quality deficiencies were experienced by Robert Bosch GmbH [14], and unexpected disruptions like wars, strikes or terrorist attacks could cause fear [11]. Risk could be the extent of loss, its significance and its probability of appearance [15], [16], the exposure to a premise of which the outcome is uncertain [17], the result of the procurement market complexity such as increased logistics costs and monopoly or oligopoly market conditions for suppliers [18], and the pressure realized from failures in inbound logistics of goods and services [19]. Thus, risks in the supply chains occur due to variation in supply chain outcomes, their likelihood, and their subjective values [20]. Such outcomes could influence the flow of information, materials and/or products, and may influence the use of human and equipment resources.

Ref. [21] argues supply risks occur as the probability of an incident associated with inbound supply from an individual supplier failure or the supply market occurring in which its outcomes result in the inability of the purchasing firm to meet customer demand. Therefore, if risk is too strong it is no longer a risk but an event certain to happen. If the probability is too low, there is likely to be an unrealistic and unfounded fear that supply chain managers will not seek to manage the situation. Thus, such situations not only trigger the need for application of risks assessment but also for the development of specific risk management mechanism.

Ref. [16] states that risks cover both endogenous (e.g. supply risk, customer risk, financial risk, fiscal risk, regulatory, and etc.) and exogenous (e.g. operation risks, asset impairment risks, and reputation risks) risks, whereas ref. [22] focuses on risk categories such as disruptions, delays, systems, forecast, intellectual property, procurement, receivables, inventory and capacity. Following similar practice, the researchers at Cranfield School of Management in United Kingdom designed typology of supply chain risks (SCR) which is basically drawn based on of earlier works. They state six dimensions (i.e., supply, demand, environmental, process, control, and information) of risk in the supply chain. Ref. [11] concludes that there are many unexpected and unpredictable disruptions that are likely to add risks in a supply

chain. Thus, it is evident that the modern managers have been confronted with the risk management challenges at both the routine operational and the more novel strategic levels, and therefore supply chain risks have now become a major threat to all organizations irrespective of their size.

Our initial review of extant SCR literature reveals variations in the understanding of risks which is perhaps the outcome of the distinct perspective that the studies have undertaken. However, most literature agrees on vulnerability and complexity of the supply chains. In continuation to the spirit of extant literature, this paper highlights SCR as being the challenges met along the supply chain performance, those could pose threat either from external or from internal or both factors. *This paper focuses only on supply, demand, process, and noncompliance risks. The frequency of these risks is relatively high compared to the risks caused by natural calamities.*

Demand risk refers to actual or potential volatility and fluctuation in market demand, which interrupts the flow of product, information and cash. For example, seasonality, volatility of fads, new product adoptions, innovative competitors, concentration of customer base and short product life. Supply risks are associated with a company's suppliers, or suppliers' suppliers. Sometimes suppliers cannot deliver the materials the company needs to effectively meet its production plan or demand forecasts. Basically the supply risk increases due to dependency on key suppliers, downtime, consolidation in supply markets, quality issues, potential disruption, and replenishment lead times and variability.

Process risks refer to the disruptions caused by the supply chain members who exert a negative impact to the company's value-adding processes and activities. The various reasons to enhance process risk would be: manufacturing yield variability, lengthy setup times, inflexible processes, equipment reliability, limited capacity /bottlenecks, outsourcing key business processes, and product complexity. Noncompliance risks are basically related with network structure and the unprecedented behaviour of actors with in supply chains that are demonstrated by the misapplication of supply chain management rules (order quantities, batch sizes, safety stock policies etc.). For instance, asymmetric power relationships, poor visibility along the pipeline, inappropriate rules that distort demand, lack of collaborative planning and forecasts, bullwhip effects due to multiple

echelons, and proprietary technology usually give rise to noncompliance risks. Such risks prevail within or beyond the boundary of organization. Application of the institutional insights may perhaps help in finding measure to mitigate such risks.

### 3. Institutional theory

Institutional theory can help explore new knowledge in many areas including risk management as this is a sociology of knowledge and realities of social construction. Ref. [23] states, "Institutions are social structures that have attained a high degree of resilience. [They] are composed of cultural-cognitive, normative, and regulative elements that, together with associated activities and resources, provide stability and meaning to social life. Institutions are transmitted by various types of carriers, including symbolic systems, relational systems, routines, and artefacts. Institutions operate at different levels of jurisdiction, from the world system to localized interpersonal relationships. Institutions by definition connote stability but are subject to change processes, both incremental and discontinuous" (p.48). In the similar vein ref. [24] argues, "The new institutionalism in organization theory and sociology comprises a rejection of rational-actor models, an interest in institutions as independent variables, a turn toward cognitive and cultural explanations, and an interest in properties of supra-individual units of analysis that cannot be reduced to aggregations or direct consequences of individuals' attributes or motives" ( p.8).

Thus, institutional theory consists of three pillars: regulatory, normative and cultural cognitive. The regulative pillar is distinguished by the prominence of explicit regulatory processes, for example: rule setting, monitoring and sanctioning. The normative pillar focuses on prescriptive, evaluative, and obligatory dimensions of the normative rules in the social life. Likewise the cultural- cognitive pillar deals with the cognitive dimension of human existence. Thus, Institutional theory cultivates the deeper and more robust aspects of social structure as it considers the processes by which structures, including schemas, rules, norms, and routines, become established as authoritative guidelines for social behaviour [25]. The growth of rationalized institutional structure makes formal organization more common and more elaborate [26]. The societal form called "organization" is the defining institution consisting individuals attempting to

achieve their goal or commitment [27]. Thus, organizations adapt institutional form to improve their efficiency and productivity.

### 3.1 Linking institutional perspective with supply chain risks

The understanding of the supply chain risks provides basis to shape such risks using the institutional perspective. A reasonable matching between the attributes of institutional pillars and the supply chain risks could lead to development of an institutional mechanism that could guide SCRM practices. The institutional theory focuses on making inquiries into how schemas, rules, norms, and routines are created, diffused, and adapted over space and time; and how they fall into decline and disuse [25].

Considering the attributes of recurring SCR it is reasonable to state that the SCR have become an institutional threat that seeks both prevention and treatment. SCRM literature clearly indicates that it has been an integral part of companies as it inherits phenomena like certain standards, rules, schemas, and knowledge over the last two decades. In a profession, standard operating procedures as a set of embedded rules carry normative elements of institutionalized behaviour [28]. Therefore, SCRM as a profession should pursue institutional practices when confronting with SCR.

This paper argues, managing supply chain risks is easier with firm institutional aspirations following normative and cultural cognitive indicators like certification, heuristics, and imitation. Certification, from the domain of normative institutional factor could be used to mitigate demand and supply risks. For example, demand risk can be dealt with using certified (highly reliable) demand forecasting methods that can probably lead to minimize forecast error. Moreover, certified designs or modules may also mitigate demand risks.

The potential risks in supplier selection can be monitored using certification criteria. Supplier certification based on ISO standards could help in making choice of suppliers. Similarly, heuristics are experience based devices typically used in decision making. Heuristics practices could speed up processes and deliver satisfactory solution, which could be used as a rule of thumb, educated guess, intuitive judgment, and even common sense. A firm can use heuristics to mitigate process as well as noncompliance risks. Imitation being a cultural dimension inspires one culture to imitate the ideas or practices of other cultures. Ref. [29]

defines imitation as learning to perform an act from seeing it done by others. The cognitive institutional system is mediating between the external world of stimuli and the response of the individual. Thus, a firm can imitate the way a better performer acts in resolving process and noncompliance risks.

A study by ref. [30] shows only about 61% of US firms have disaster recovery plans, those that do typically cover data centres, only 12% cover total organizational recovery. Few plans include steps to keep a supply chain operational, Only about 28% of companies have formed crisis management teams, and even fewer have supply chain security teams. An estimated 43% of businesses that suffer a fire or other serious damage never reopen for business after the event. This shows that modern organizations' SCRM practices are constrained by various reasons for examples, physical and human resources, technology, culture and etc. Thus, we argue that the institutional measures are enriched along the long practice and experience that could offer reasonable benefits when dealing with SCR.

## 4. Framework of supply chain risks management

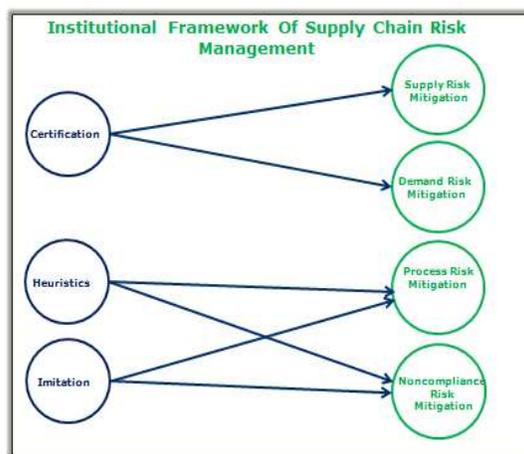
Existing literature indicates that research on SCRM should attempt to describe, explain, predict and understand the supply chain risks. This paper attempts to explore the specific mechanism for managing supply chain risks. More specifically, institutional theory has been pursued as value adding not only to the performance of the firms but also to their supply chain.

Some empirical literature for example, ref. [31] studied the impact of institutional environment on the development of trust and information integration between buyers and suppliers and reported some effects on Chinese companies. Similarly, ref. [32] concludes with five different legitimacies useful for strategic alliance. We argue SCRM may perhaps accommodate some institutional constructs which in a way either explore the SCRM field or at least complement prevailing understandings. Being a profession SCRM requires specific skill, knowledge, and experience in order to properly mitigate diverse SCR. For this reason there is an emerging need of a SCRM theory which could embed with normative and cultural cognitive dimensions of institutional theory.

The proposed Institutional framework intends to blend some institutional factors with supply chain

risks as it is firmly based on the insights of earlier studies on supply chain risks, supply chain risk management and an institutional theory. We argue certification can enhance task routinization which facilitates addressing of demand risks and at the same time this also empowers knowledge that could mitigate supply risks. Similarly, heuristics may influence decision processes that result in better control over noncompliance and process risks. Likewise, imitation may become strategic choice in learning established practices of some leader actors so as to mitigate both noncompliance and process risks. More detailed analysis on such arguments is presented below in the subsequent section.

The Figure 1 presents a framework of SCRM using some key constructs from institutional spectrum and SCR. In general noncompliance and process risks are relatively manageable compared with demand and supply risks. The information system can provide clues about the occurrence possibility of process and noncompliance risks, which could be tackled using heuristics and imitation. But for the demand and supply risks, it is not likely to get information about potential risks because of the uncertain and volatile nature of risks; however certification criterion could be exercised to improve performance.



**Figure 1.** Institutional Framework of SCRM

The proposed SCRM mechanism perhaps fills the gap that ref. [4] from Cranfield School of Management UK argued - the culture of risk management should extend beyond the boundaries of corporate risk and business continuity management to become 'supply chain continuity management'.

## 5. Research propositions

### 5.1 Certification

Certification is an indicator of normative institutional pillar. This could be a process of conforming certain quality or standards of tools and techniques. Certified tools and techniques can always mitigate supply and demand risks. The International Organization for Standardization (ISO) developed ISO 9000 series during the mid 80's and these standards have gained world-wide acceptance as an approach of quality systems. ISO 9000 series cover three standards; ISO 9001, ISO 9002, and ISO 9003 which are basically serving external certification [33]. Similarly ISO 9004 provides the background and the philosophy behind the quality systems thus it could be a good starting point to develop an organization's quality system. In the business world ISO certification is often considered as an important factor to gain successful performance. Ref. [34] studied the relationship between 'certification on the ISO 9000 series' and the 'performance of organizations' and conclude that motivation for gaining ISO certification has an important effect on the performance of organizations.

ISO certification could be a way to define certification, however from institutional perspective it could represent much broader perspective. The proven mechanism perhaps captures the essence of certification. Certified means are accredited along with the practice of organizations. Accreditation could be defined as a genuine practice of organizations that is established over the years. To secure accreditation organizations need to follow some strict guidelines and meet the necessary conditions to be able to face the challenges posed by demand fluctuations and volatility of demand. Moreover, certification could be understood as a highly regarded process in every field that allows probably the best solution as of current evolution.

Given the basic attributes of demand risks for instance demand fluctuation becomes difficult to handle, however the professional with certified skills can devise a mechanism that either helps learn the real demand or creating new demand of the products or services. Furthermore, certification is quite relevant with supply risks, as it concerns the decision to make choice of supplier. The ISO certified supplier could be less risky choice. Similarly, the standard way of dealing with products and services may be devised through

understanding customer choice and preferences which can be fixed by introducing good designs and modules of products and services or by offering good quality items. Certified physical resources could be able to sort out several problems at source.

Every organization should pay proper attention to validating their resources and mechanisms in order to ensure minimum risk. We believe that certification practice decreases the potential demand and supply risks that leads towards long term succession of the firms. Based on such underpinnings we derive proposition P1 (a) and P1 (b) below.

**P1 (a):** *Organizations' practice of extensive certification can enhance demand risk mitigation.*

**P1 (b):** *Organizations' practices of extensive certification can enhance supply risk mitigation.*

## 5.2 Heuristics

Heuristics is basically concerned with human brains that synthesize information and abruptly use them to derive ways out in critical conditions. Within organizations, heuristics have been considered a major weapon to make critical decisions. Heuristics could be integral to successfully completing complex tasks within very short time horizons for examples corporate planning, stock analysis and performance appraisal and so on. The role of heuristics might be profound in differentiating successful top executives and board members. Behavioural scientists studied models of heuristics, such as lexicographic rules, less-can-be-more, elimination-by-aspect, and equal-weight rules in different settings and conclude with positive notes. Heuristics helps in making judgments more quickly and frugally that somehow reduces effort using behavioural cues.

Ref. [35, p. 454] states "A heuristic is a strategy that ignores part of the information, with the goal of making decisions more quickly, frugally, and/or accurately than more complex methods" The goal of making judgments more accurately by ignoring information sounds weird but this is the way heuristics works. It goes beyond the classical assumption that a heuristic trades off some accuracy for less effort. A study by ref. [36] shows most managers in Europe, North America, Japan, Brazil, and India rely on "intuitive" heuristics rather than on this or similar statistical forecasting methods. Further, Ref. [37] claims heuristics consist of the accuracy effort trade-off, and the

ecological rationality; people save effort with heuristics but at the cost of accuracy.

Process risks are basically caused through inadequate focus on production processes such as in continuous production flow strategy one of the process may be a bottleneck (not perform smoothly) and as a result the immediate process fall short of input material which interrupt the whole production system that unnecessarily increase idle time in the downward operations making the whole supply chain inefficient. In such situation manager can employ heuristics to attain control, one heuristics solution could be to exploit the bottleneck process round the clock ensuring the required inputs to the immediate process. The increasing trend of outsourcing noncore component may also cause process risks. To illustrate this we can think of one automobile production company that is perhaps relying on global outsourcing for several noncore components. Due to some reason the consignment may not reach the automobile company within stipulated time (lead time) which makes delay in final assembly process and consequently final delivery of finished products get hindered. In order to avoid such process risks managers can use heuristics by calculating possibility of such exposure in advance and carries sufficient buffer to mitigate such unprecedented process risk although the management philosophies like lean thinking and just in time inspire to remove buffer and save such additional carrying cost.

Prevalent ideas may emerge from heuristics that are taken for granted as being derived from a good cultural background and perceived to offer legitimate solutions for some decisional deviations in some firms. These solutions are based on human cognition evolved over the years of practice in the same setting. Noncompliance risks are more short of manageable ones, the only thing to remember is monitoring whether the way rules are applied properly. For example bullwhip effect would cause unnecessary stock piling leading to obsolescence of the items. Such situation can be predicted in advance and precautionary measures could be employed to better manage them. We argue cultivating heuristics decision more likely ensures the possibility of effective solution (through the required degree of sophistication) over the process and noncompliance risks. Based on such arguments we develop P2 (a) and P2 (b) underneath.

**P2 (a):** *The practice of heuristics in decision making may exert positive influence on process risk mitigation.*

**P2 (b):** *The practice of heuristics in decision making may exert positive influence on noncompliance risk mitigation.*

### 5.3 Imitation as a means

Imitation construct is not much used in inter-organizational literatures. Institutional theory invokes the fact that imitation is a tendency of learning from others. There are far more studies on imitation from different perspectives, but this study is solely considering the institutional perspective, therefore based on this insight imitation of some better performing firms could be a source for the beginner firms.

Ref. [38, p.76] states, "In the attempt to speed the internal transfer of knowledge, the dilemma arises that capabilities which can be easily communicated within the firm are more likely to be easily imitated by competitors." They claim firm's communicable capabilities, capability spill over, and outsider efforts to develop similar product are easily imitated by the outside firm within short period of time. Following this understanding, we argue that, imitation/mimicry being a cultural cognitive factor can guide individual/organization in discriminating organizations to better identify the needed knowledge. Therefore this could be a reliable way to find some practices of leading actors. This may help in developing capability through copying established practice of those leading actors (firms). Imitation signifies to perform more closure to the leader actor that gives advantage in terms of additional capacity and skill. This shows that imitation may be established as a business strategy to face emerging process and noncompliance related challenges within the supply chain. Imitation can be even more useful when it is applied together with cognizance. Cognizance is a mental knowledge developed along the long experience of the organization. Imitation has been acknowledged as a measure that makes people or organization aware of the consequences from some deeds undertaken to produce some effects or outputs. As we learned process risks are mostly caused by limited capacity (bottleneck), inflexible operations etc., and that could be mitigated through imitation of the better performer. For several other discrepancies, a well exercised imitation tactics could help to attain firms' goal. We mean a careful imitation inspires organizations to identify resources and mobilize them whenever they feel necessary to mitigate process risks. In the real world it's difficult to get certainty of the results as

per expectation, but if leaders follow imitating the best performers, this perhaps help them to some extent. To illustrate imitation practice we can take a slight look on giant mobile phone manufacturers, they are innovating one after another products, at the same time some others are imitating to produce similar but little lower grade mobile phones that are targeting the lower class customers. Such cases are observable in developing economies like China and India.

Resolving process risk is much easier by imitation, the main thing to confirm is to identify the well performing company and take advantage from their knowledge spill over. The noncompliance risk for instance as manifested in terms of faulty order quantity, and augmented batch size cause further problems in the supply chain could be prevented before they happen following imitation of better performer firm.

Imitating could be used while mitigating other risks too, but process and noncompliance risks are relatively easier to work with. In order to be precise with possible ways of dealing with risks, we develop propositions P3 (a) and P3 (b) underneath.

**P3 (a):** *Imitation through learning of best practices can enhance process risk mitigation.*

**P3 (b):** *Imitation through learning of best practices can enhance noncompliance risk mitigation.*

## 6. Conclusion

This paper has both theoretical and managerial implications, theoretically it explores the institutional perspective within supply chain risk management paradigm, which could perhaps offer managerial guidance to the modern business owners or managers. Drawing on previous review papers in supply chain risks, institutional theory has been used as theoretical lens to develop supply chain risks management (SCRM) framework. This paper asserts that SCRM could perhaps be viewed as a profession that occupies with standard operating procedures as a set of embedded rules, and equips with normative and cultural-cognitive institutional elements. Institutional elements: certification, heuristics, and imitation could be used to mitigate supply chain risks. Following this line of thinking, six different positive relationships are explored that are: relationship between - (1) certification and demand risks, (2) certification and supply risks, (3) heuristics and process risks, (4) heuristics and noncompliance risks, (5) imitation and process risks, and (6) imitation and noncompliance risks. It can be concluded that the

chosen institutional elements exert positive influence over supply chain risk mitigation. Furthermore, we could perhaps assert that managing supply chain risks is possible only with specific knowledge which is trustworthy, and highly reasonable.

SCRM could turn into standard operating procedures as a set of embedded rules that are equipped with normative and cultural-cognitive institutional elements. The rational is to make proper use of certification, heuristics, and imitation that could lead towards a better mitigation of supply chain risks which is obviously inclined to add value in the supply chain.

We would like to point out a number of possibilities for future empirical research following institutional perspective such as; impact of such institutional elements while identifying supply chain risks, assessment of the influence of such elements in specific supply chains, mediating role of decision processes between such constructs and specific supply chain risks, transaction cost aspect on supply risks mitigation, and so on so forth.

We believe the framework could provide guidance to supply chain risk management or supply chain continuity management as it constitutes broader perspective. For the better SCRM, institutional elements distinguished by rules, laws, ethics, morale, cultures, and concepts can offer great advantage. Moreover, the framework could be pursued as attributed by the thinking 'prevention is better than cure' that is more short of laying institutional humps (i.e., speed breaker) to make aware to all supply chain members that are prone to risks. This is because we strongly believe; organizations do get some lessons on what they should pursue before playing with supply chain risks. It is to note that, institutional framework would always be 'all-time hit' if it is used along with the appropriate strategies enriched within SCRM. Finally, it is worth to conclude that modern organizations could certainly benefit from the use of proposed SCRM framework.

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### References

- [1] Hallikas, J., Karvonen, I., Pulkkinen, U., Virolainen, V., and Tuominen, M., "*Risk management processes in supplier networks*", International Journal of Production Economics, Vol. 90, No. 1, pp. 47-58, 2004.
- [2] Kern, D., Moser, R., Hartmann, E., and Moder, M., "*Supply risk management: Model development and empirical analysis*", International Journal of Physical Distribution & Logistics Management, Vol. 42, No. 1. pp. 60-82, 2012.
- [3] Gyorey, Trish, Matt Jochim, and Sabina Norton, "*The challenges ahead for supply chains*" McKinsey Quarterly, 2010.
- [4] Christopher, M. and Peck H., "*Building the resilient supply chain*", International Journal of Logistics Management, Vol. 15, No. 2, pp.1-13, 2004.
- [5] Hoffman, MA and Greenwald, J., "*Vendors: a key link in safeguarding supply chains*", Business insurance, Vol.39, No. 12, pp. 11-17, 2005.
- [6] Bartholomew, Doug, "*Supply Chains at Risk*", Industry Week, Vol. 255, No.10, pp.54-60, 2006.
- [7] Tang, C. S., "*Perspectives in supply chain risk management*", International Journal of Production Economics, Vol. 103, No. 2, pp. 451-488, 2006.
- [8] Clemons, E., "*Gauging the power play in the new economy*", Financial Times, June 13, 2000.
- [9] Jüttner, U., Peck, H. and Christopher, M., "*Supply chain risk management: outlining an agenda for future research*", International Journal of Logistics: Research and Applications, Vol. 6, No. 4, pp.197-210, 2003.
- [10] Jüttner, U., "*Supply chain risk management*", International Journal of Logistics Management, Vol. 16, No. 1, pp. 120-41, 2005.
- [11] Christopher, M. and Lee H., "*Mitigating supply chain risk through improved confidence*", International Journal of Physical Distribution & Logistics Management, Vol. 35, No. 4, pp.388-396, 2004.
- [12] Spekman, R.E., Davis and E.W., "*Risky business: expanding the discussion on risk and the extended enterprise*", International Journal of Physical Distribution and Logistics Management, Vol. 34, No. 5, pp.414-433, 2004.
- [13] Paulson, U., "*Developing a supply chain flow risk model.*" In: Proceedings of the NOFOMA 2005 Conference, Copenhagen, 9-10, 2005.
- [14] Wagner, S.M. and Bode, C., "*An empirical investigation into supply chain vulnerability*",

- Journal of Purchasing and Supply Management, Vol. 12, pp.301-312, 2006.
- [15] Yates, J.F. and Stone, E.R., *"The risk construct in: J. Yates (Ed.), Risk Taking Behavior"*, Wiley, New York, pp. 1-25, 1992.
- [16] Harland, C.M., Brenchley, R. and Walker, H., *"Risks in supply networks"*, Journal of Purchasing & Supply Management, Vol. 9, No.1, pp.51-62, 2003.
- [17] Rao, S. and Goldsby, T.J., *"Supply chain risks: A review and typology"*, The International Journal of Logistics Management, Vol. 20, No. 1, pp.97-123, 2009.
- [18] Kraljic, P., *"Purchasing must become supply management"*, Harvard Business Review, Vol. 61, No. 5, pp.109-117, 1983.
- [19] Zsidisin, G.A., Panelli, A. and Upton, R., *"Purchasing organization involvement in risk assessments, contingency plans and risk management: an exploratory study"*, Supply Chain Management; An International Journal, Vol. 5, No. 4, pp.187-197, (2000)
- [20] March, J. and Shapira, Z., *"Managerial perspectives on risk and risk taking"*, Management Science, Vol. 33, No. 11, pp.1404-1418, 1987.
- [21] Zsidisin, G.A., *"A grounded definition of supply risk"*, Journal of Purchasing and Supply Management, Vol. 9, No. 5/6, pp. 217-224, 2003.
- [22] Chopra, S. and Sodhi, M., *"Managing risk to avoid supply chain breakdown"*, MIT Sloan Management Review, Vol. 46, No. 1, pp.53-62, 2004.
- [23] Scott, W.R., *"Institutions and Organizations"*, Thousand Oaks, Sage Publication, 2001.
- [24] Powell, W. & Dimaggio, P. J., *"The new institutionalism in organizational analysis"*, Chicago, University of Chicago Press, 1991.
- [25] Scott, W. R., *"Institutions and organizations ideas and interests"*, Sage Publication, 2008.
- [26] Meyer, John W. and Brian Rowan, *"Institutionalized Organizations: Formal Structure as myth and ceremony"*, American Journal of Psychology, Vol. 83, pp.340-363, 1977.
- [27] Zucker, Lynne G., *"Organizations as institutions, In research in the sociology of organizations, edited by Samuel B. Bacharach"*, Vol. 2, pp.1-47, Greenwich, CT: JAI Press. 1983.
- [28] March James G., and John P. Olsen, *"Rediscovering Institutions: The organizational basis of politics"*, New York: The Free Press, 1989.
- [29] Thorndike, E.L., *"Animal intelligence: An experimental study of the associative processes in animals"*, The Psychological Review: Monograph supplements, Vol. 2, No. 8, i. 1898.
- [30] Helfferich, O.K. and Cook, R.L., *"Securing the supply chain"*. Oak Brook, IL: Council of logistics management, 2003.
- [31] Cai, S., Jun, M., Yang, Z., *"Implementing supply chain information integration in China: The role of institutional forces and trust"*, Journal of Operations Management, Vol. 28, pp. 257–268, 2010.
- [32] Dacin M.T., Oliver, C., Roy, J., *"The legitimacy of strategic alliances: an institutional perspective"*, Strategic Management Journal, Vol. 28, pp.169-187, 2007.
- [33] Brown Alan and Wiele Ton Van Der, *"A typology of approaches to ISO certification and TQM"*, Australian Journal of Management, Vol.21, No. 1, pp.57-73, 1996.
- [34] Jeroen S., GwennyRuel, Henny van de Water, *"ISO 9000 series Certification and performance"*, International Journal of Quality & Reliability Management, Vol. 18, no. 1, pp. 62 – 75, 2001.
- [35] Gigerenzer, G., and Wolfgang G., *"Heuristic decision making"*, Annual Review of Psychology, Vol.62, pp. 451-482, 2011.
- [36] Parikh J., *"Intuition: The New Frontier of Management"*, Oxford, UK: Blackwell Business, 1994.
- [37] Shah AK, Oppenheimer DM., *"Heuristics made easy: an effort-reduction framework"*, Psychol. Bull., Vol. 137, pp.207-222, 2008.
- [38] Zander U., and Kogut, B., *"Knowledge and the Speed of the Transfer and Imitation of Organizational Capabilities: An empirical test"*, Organization Science, Focused Issue: European Perspective on Organization Theory, Vol. 6, No. 1, pp. 76-92, 1995.