

# Flexibility and Relationship Integration as Antecedents of Organisation's Supply Chain Agility

Sajad Fayezi, Ambika Zutshi, and Andrew O'Loughlin

**Abstract**—The paper investigates the inter-relationships between relationship integration, flexibility and agility across the organisation's supply chain. Some hypotheses were drawn from an extensive review of the literature and an earlier qualitative research. The conceptual framework proposed in this paper contributes to the better understanding of the supply chain agility and its key antecedents, which is crucial to the business stability and prosperity amid the intense turbulence, uncertainty and competition.

**Index Terms**—Agility, flexibility, relationship integration, supply chain management.

## I. INTRODUCTION

It has been acknowledged that different types of marketplace change demands different abilities for effective and efficient change response by organisations [1]. In this regard, agility is among important response abilities that has attracted both scholar's and practitioner's attention for a long period of time. Nevertheless, confusion surrounding its true understanding across the supply chain continues to plague theoretical development of the supply chain agility [2], [3].

This paper aims to contribute to the better understanding of agility by investigating its inter-relationships with relationship integration and flexibility across the supply chain. A review of the agility-specific literature has assisted the authors to identify supply chain relationship integration and flexibility as important antecedents for agility which have received less attention by supply chain researchers. Particularly, an integrative view to the three constructs has not yet been provided despite its promising implications. In light of the identified gaps in the literature, the research question for this paper has been formulated as follow:

How manufacturing organisation's relationship integration with key partners and flexibility across the supply chain might impact their supply chain agility?

In order to answer the above research question, a mixed-methods research was designed to first purify the measurement scales of the three constructs and understand their potential inter-relationships (through a qualitative research). This paper reports on the conceptualisation and operationalisation aspects of the research. In the second stage, an empirical investigation of the developed hypotheses will be undertaken.

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## II. CONCEPTUAL DEVELOPMENT

The conceptual underpinning of agility lies in the organisation's alertness and rapid response to predictable and unpredictable marketplace changes [4]-[7]. No organisation operates in isolation and accordingly agility can be seen as a feature of collaborating systems such as supply chains [7]. Christopher [6] contends that agility as a "business-wide capability" encompasses structures, information systems, logistics and mindsets. A truly agile supply chain is believed to possess four characteristics, i.e., market sensitivity, virtuality, process integration and network integration [6], [8], [9]. In order for supply chain organisations to manage these characteristics both internal (e.g., processes) and external (e.g., partners) environments need to be carefully considered [10], [11].

In essence, the literature suggests that flexibility within processes such as procurement, manufacturing and distribution can contribute to an organisation's supply chain agility [12]. Bal *et al.* [13], however, emphasise the role of relationship when they remark: "...a fully agile supply chain is as much to do with business relationships and technology as it is to do with production process". Similar argument has been presented by Kisperska-Moron & Swierczek [14] who investigated the agile capabilities of Polish companies. Thus, agility may be characterised as an interconnecting feature of the organisation's supply chain rather than a specific process which has operational or strategic pre-eminence [15].

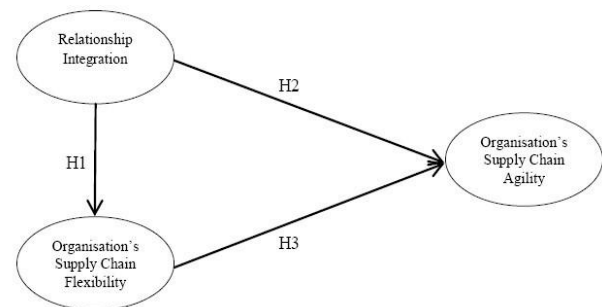


Fig. 1. Conceptual framework

H1: An organisation's relationship integration with key suppliers/customers positively influences its supply chain flexibility.

H2: An organisation's relationship integration with key suppliers/customers positively influences its supply chain agility.

H3: An organisation's supply chain flexibility positively influences its supply chain agility.

In light of the above, the conceptual framework in Fig. 1 was developed by the authors who show the direction of the

relationships between the three constructs of this research (i.e., relationship integration, flexibility and agility) and the ensuing hypotheses. The development of this framework, apart from addressing the identified gap within the literature, has been inspired by the organisational theories such as agency theory (e.g. [16], [17]). Noteworthy are the relationships between manufacturer and its partners (suppliers and customers) that are conceptualised from agency perspective.

### III. CONSTRUCT OPERATIONALISATION

Based on a review of the literature and results from an

earlier qualitative study, operationalisation of the constructs was performed (see Table I). The organisation’s supply chain relationship integration (supplier/customer) and flexibility have comprised the independent variables as shown in Fig. 1. The former has three dimensions in terms of trust, information sharing, and incentive alignment (risk/reward sharing) while procurement flexibility, manufacturing flexibility and distribution flexibility constituted the supply chain flexibility construct. Organisation’s supply chain agility as the dependent variable has four dimensions of mindset, intelligence, process and speed. Consequently, the constructs of this research have been operationalised as second order factors in line with their conceptual definition.

TABLE I: CONSTRUCTS OPERATIONALISATION

Independent Variables			Dependent Variables		
Relationship integration	Dimensions	Organisation’s supply chain flexibility	Dimensions	Organisation’s supply chain agility	Dimensions
	Trust		Procurement flexibility		Mindset
	Information sharing		Manufacturing flexibility		Intelligence
	Risk/reward sharing		Distribution flexibility		Process
			Speed		

As noted, the process of item generation for the measurement of the above constructs was guided by their definitions, developed through both review of the literature and results from an earlier qualitative research conducted by the authors. In this regard, the items drawn from the literature were used only if enough support from the qualitative study was identified. Some of the items have also been directly extracted from the analysis of the interviews (however their final inclusion in the questionnaire was assessed through extensive pilot study).

### IV. DISCUSSION AND CONCLUSION

The conceptual framework developed and discussed in this paper provides an integrative view of the organisation’s supply chain agility, organisation’s supply chain flexibility and relationship integration with key partners. The hypotheses ensued from the conceptual framework highlight the importance of relationship integration to the organisation’s supply chain agility and establish the positive impact of flexibility on agility across the supply chain. Furthermore, the influence of relationship integration on flexibility is emphasised. Therefore, it can be speculated that organisations with superior relationship integration and flexibility across the supply chain can better deal with uncertainties and changes through their improved level of agility. The hypotheses discussed in this paper should be empirically tested to assess their practicality.

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