

WHICH SUPPLY CHAIN MANAGEMENT PROCESS TO BE INTEGRATED? STUDY OF MULTI-TIER AUTOMOTIVE SUPPLY CHAINS

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ABSTRACT

This study was initiated with two main objectives, first, to explore which supply chain management process (SCMP) or processes are critical (beneficial) to integrate across multi-tier end-to-end supply chains. Second, identify possible similarities and differences among members of same supply chain regarding significance of integrating different SCMP. Eight SCMP (as suggested by Lambert et al. 1998) were included in the study to measure the significance of integrating a few or all supply chain management processes. General survey guided by structured questionnaire has been administered across a sample of seventy nine (79) business organizations representing multi-tier Pakistani automotive supply chain. Sample represents six major supply chain players including 3rd, 2nd and 1st tier suppliers, original equipment manufacturer (OEM), logistics service providers (LSP) and authorized dealers. The findings of this study present valuable academic and managerial implications. For example, automotive supply chain players have proposed varying levels of integration i.e. strategic collaboration, functional interaction, operational cooperation and transactional interaction for each SCMP. Secondly, all SCMP were declared critical and beneficial for integration except returns management. Thirdly, in addition to some similarities, differences of opinion were observed in terms of integration of each SCMP with different supply chain partners. Finally, this study also provides deep insight to the automotive managers regarding significance of integration of each SCMP at specific level.

Keywords: *Supply Chain Management Processes, Integration, Prioritization, Automotive Industry of Pakistan.*

1) INTRODUCTION

The term supply chain management (SCM) was introduced in early 1980's. With the passage of time it has gained substantial attention from academic researchers. Since then, practitioners and academicians (Gibson, Mentzer, & Cook, 2005; Kilpatrick & Factor, 2000; Mentzer et al., 2001; Sahin & Robinson, 2005) are consistently endeavouring to give structure to SCM by re-examining previous definitions and offering more comprehensive definitions that include scope, functions and relationships. Today, supply chain management stands for the integration of activities, functions and/or key business processes from point-of-origin to the point-of consumption.

Despite the remarkable efforts to standardize the term SCM, still there is an ongoing debate, which process or processes should be included in the scope of SCM. Different authors have recommended different processes for integration. For example, Stevens (1989), Ellram and Cooper (1990), Cooper et al. (1997) and Cooper (1998) have proposed several supply chain management processes to be included in the scope of supply chain management. Proposed processes in the above cited studies reflect differentiation of opinion among researchers with respect to scope of SCM. The same has been highlighted by Frankel et al. (2008) referring to the Journal of Business Logistics that "there is still uncertainty as to what supply chain management is and what functions and/or processes should be included within it" (JBL Special Issues Call for Papers, 2005). Even a choice between activities, functions and processes, which one or all of them should be considered as a base for integration is not settled yet. This situation invites the attention of supply chain researchers to further explore the scope of supply chain management and extend the debate to unsettled issues like which and how many activities, functions and processes should be integrated. In existing literature, majority of the authors are of the view to integrate supply chains through business processes.

Observing the scarcity of research in context of SCM, this paper addressed two major issues, first, which supply chain management process and/or processes are critical and/or beneficial to integrate across multi-tier supply chains and second, to expose comparative importance of each SCMP with respect to each individual supply chain partners. This paper extends the debate to process view of SCM initially proposed by

Cooper et al (1997). It is believed that knowing the most significant, critical or beneficial supply chain management process for integration will help business managers to depute resources accordingly. To collect appropriate responses, this study is conducted in automotive industry of Pakistan. Eight key SCMP (as suggested by Lambert et al. 1998) which are, customer relationship management (CRM), customer service management (CSM), demand management (DM), order fulfillment process (OFP), manufacturing flow management (MFM), supply management (SM), product development & commercialization (PD&C), and returns management (RM) are used to accomplish the objectives of this study.

2) LITERATURE REVIEW

2.1) Scope of Supply Chain Management

While, defining the scope of SCM, Cooper et al. (1997, p.02), stated that the number of activities and functions involved in integration, determines the scope of SCM. In 2001, Mentzer et al. have classified scope of supply chain management from two different perspectives i.e. functional and organizational. Functional scope of SCM refers to traditional business functions like, marketing, finance, procurement, logistics etc., while, organizational scope refers to number and type of business players to be included in the scope of SCM. As stated earlier, different authors have suggested several functions and/or processes to be added in the scope of SCM.

For example, Stevens (1989), Ellram and Cooper (1990), and Ellram (1991) stressed the need for information systems integration. While, Ellram and Cooper (1993) and Cooper and Ellram (1993) suggest the need to integrate and align planning and control activities. On the other hand, Bowersox (2003) and Cavinato (1992) proposed cooperative efforts between chain members in areas like marketing research, promotion, sales and information gathering, research and development, product design, and total system/value analysis. In similar tune, for supply chain integration, Cooper et al. (1997) suggests five basic functions i.e. purchasing, materials management, production, physical distribution and marketing & sales along with eight key business processes i.e., customer relationship management (CRM), customer service management (CSM), demand management (DM), order fulfillment (OFP), manufacturing flow

management (MFM), supply management/procurement (SM), product development & commercialization (PD&C) and returns management (RM). Similarly, Council of Supply Chain Management for Professional (CSCMP) has recommended all the activities involved in sourcing and procurement, conversion and all logistics management activities to be included in the scope of SCM.

In addition to academic debates, one can also find process integration from the practices of leading manufacturers like Hewlett-Packard (Lee, Billington, & Carter, 1995) and Xerox (Camp & Colbert, 1997). Primarily, based on the success history of many organizations like Xerox, Digital Equipment Corporation, AT&T Network Computer system and Hewlett-Packard, Hewitt (1994) has built number of logical reasons to support process integration. According to Hewitt (1994), process are generally regarded as “primary”, “core” or even “strategic” within overall business enterprise process architectures, additionally, significant number of redesign initiatives have focused on the process and have claimed very substantial efficient and effective. In 1998, Motwani et al. argued that organizations can only adopt a supply chain focus when other internal processes have been identified and improved. Significance of process integration has also been recognized by Lambert, Giunipero and Ridenhower (1997). They stated “successful SCM requires a change from managing individual functions to integrating activities into key supply chain business processes” (cited in Lambert et al., 1998). Additionally, Croxton et al. (2001) have also acknowledged the integration of key business processes and suggest that integration should be implemented first inside the organization and then extended across the firms in the supply chain. Recently, Power (2005) has encouraged integration of supply chain processes. According to him, process integration can provide effective means by which costs can be reduced and customer service levels can be enhanced.

2.2) Supply Chain Integration

Literature is unable to provide any specific definition of the term integration, and if there is any, yet there is no agreed-upon definition (Dong, Carter, & Dresner, 2001; Fawcett & Magnan, 2002; Kahn & Mentzer, 1996). Among the earlier definitions, Lawrence and Lorsch (1967, p.11) stated integration “as the quality or state of collaboration that exists among departments that are required to achieve unity of effort by

the demands of the environment” (Lawrence & Lorsch, 1967). While, according to Souder (1977, p.i) integration is “a state of high degree of shared values, mutual goals commitments, and collaborative behaviours” (Souder, 1977). These definitions explained interaction, sharing, cooperation, mutuality and collaborative behaviours as the bases for supply chain integration.

The ultimate objective of integration is to build long lasting relationship aimed at collective goals, shared risks/rewards, and common vision. According to Anthony (2000), integration means two or more companies share their responsibility of exchanging common planning, execution, and performance measurement information. In similar meaning, Simatupang and Sridharan (2002, p.19) defined supply chain collaboration (integration) as “two or more independent companies work jointly to plan and execute supply chain operations with greater success than when acting in isolation (Simatupang & Sridharan, 2002). It has been observed by various researchers that supply chain integration is a continuous process that can be optimized only when assemblers, suppliers and customers work collectively to improve their relationships and to align their key business processes.

Despite the remarkable advantages of integration, very limited numbers of firms have achieved total integration across the whole chain. Indeed, the extent of integration is operationalized in term of more versus less integration, e.g. Frohlich and Westbrook (2001), use new expression and named it “arcs of integration” to characterize the extent to which firms integrate with upstream and downstream supply chain partners. They have observed that larger integration arcs leads to valuable gains in term of financial performance, productivity, and non productivity measures (Frohlich & Westbrook, 2001).

Monczka and Morgan (1997) stated that integrated supply chain management is about going from the external customer and then managing all the processes that are needed to provide the customer with value in a horizontal way. According to Ballou (2004) the extent of integration can begin with product design, and incorporate all steps leading to the ultimate sale of the item. Some authors also include all activities throughout the useful life of the product including service, reverse logistics and recycling (Thomas & Griffin, 1996). Researchers are also of the views that dedicated efforts are required from all the

participants to attain long lasting relations. These dedicated efforts required proper mind set with long term orientation, high involvement in decision making, trust, and commitment (Kwon & Suh, 2004a, 2004b). Similarly, with respect to supply chain integration, number of researchers have investigated role of technology and its practices to fully integrate information across supply chain networks (Briggs & Shore, 2007).

Based on above cited researches, it is argued that instead to integrate traditional business function(s), it would be beneficial to integrate key business processes. However, which supply chain management process and/or processes are critical and/or beneficial to integrate across multi-tier supply chain is still unclear. It is therefore, an attempt has been made through this paper to expose which supply chain management process or processes are beneficial to integrate. Similarly, knowing comparative importance of each SCMP with respect to each individual supply chain partners in multi-tier supply provide meaningful insight both to academicians and practitioners.

3) RESEARCH METHODOLOGY

This study is carried out in automotive industry of Pakistan. Sampling frames were obtained from Pakistan Automotive Manufacturing Associations (PAMA) and Association of Pakistan Motorcycle Assembler (APMA). General survey guided by structured questionnaire has been administered across a valuable sample of seventy nine (n=79) business organizations. Sample represent members of multi-tier extended end-to-end supply chain i.e. 3rd tier suppliers (n=07), 2nd tier suppliers (n=16), 1st tier suppliers (n=18), original equipment manufacturer (OEM's) (n=12), logistics service providers (n=02), authorize dealers (n=24). Multiple respondents representing various departments were selected based on their job description and/or involvement in any of the eight supply chain management process that were under observation. Managers were requested to prioritize (rank) each SCMP based on its relative importance in term of supply chain integration. Additionally, managers were also requested to prioritize (rank) SCMP in term of its relative significance for each individual supply member.

Structured questionnaire were circulated among managers (two to seven) representing various departments like, supply chain, logistics, warehouse, marketing, sales, production, quality, service etc. Managers were

requested to prioritize (rank) eight key supply chain management processes i.e. customer relationship management (CRM), customer service management (CSM), demand management (DM), order fulfillment process (OFP), manufacturing flow management (MFM), supply management (SM), product development & commercialization (PD&C) and returns management (RM). Managers were requested to rank each SCMP while keeping in view its importance/significance in terms of supply chain integration. In order to establish consensus among managers of the same organization, differences were identified. After discussion (i.e. safeguarding interpretations by arguments), all respondents of the same organization were requested to unanimously declare (only if they think, it is possible) which supply chain management process and/or processes are beneficial to integrate. To authenticate the final response, supporting documents like, meetings memos with different tier members, schedules of joint workshop and training sessions, briefing on common software, sharing of designs/modules and minutes of the meetings were collected, reviewed and analyzed.

4) FINDINGS & DISCUSSION:

The real aspiration of this study is to explore which supply chain management process or processes are critical and beneficial to integrate across multi-tier end-to-end supply chain. It is argued that knowing which SCMP is more beneficial than the other will help business managers to integrate that process at better level that leads to generate valuable outcomes. It will also be meaningful for managers to depute resources (both financial and human) only in the said process which leads to optimization of organizational resources. Later on, the scope of integration can be extended to other supply chain processes based on their relative significance in term of integration. Next sections present the findings of this study.

4.1) Prioritization of SCMP - OEM's Perspective:

Table - 1 present aggregate mean analysis of twelve OEM's and presents their opinion in term of relative significance of each SCMP in context of supply chain integration (SCI). For authorized dealers, OEM's have recommended CSM as the most crucial SCMP for integration followed by CRM, SM, DM and OFP. Interestingly, OEM's have suggested 'strategic collaboration' as optimal level of integration for CSM, CRM and SM.

These results highlight the significance of process integration with authorized dealers. Prioritization of CSM as the most critical SCMP reveals that industries offering technical and complex products like automobiles, their authorized dealers are required to provide matchless services to gain competitive advantages for the entire supply chain. In this regard, OEM's believe that the role of authorized dealers in context of customer order visibility is extremely crucial to attain customer satisfaction. Similarly, through complaint (handling) management, dealers can deliver unique experiences which may help companies to retain their existing customers. Hence, OEM's have recommended CSM, CRM and SM as the most crucial (beneficial) processes for integration.

Despite the fact that dealers can provide valuable customer feedback that can significantly contribute in new product development, however, comparatively low mean score reveals that OEM's intend to restrict high involvement of authorized dealers in PD&C and MFM. Such findings invite the attention of manager's at OEM's to re-asses their organizational policy and give due consideration to their authorized dealers by extending the level of integration even in the processes like PD&C and MFM. As compared to dealers, for LSP's, OEM's have recommended SM as the most crucial SCMP for integration followed by OFP, CSM and MFM. Findings in Table -1, disclose that selection of appropriate LSP's is of great concern for original equipment manufacturers and hence they have shown great concern by prioritizing SM for LSP's. It also means that OEM's want to establish long lasting relationships with LSP's to channelize and facilitate on time deliveries. Similarly, results reveal that OEM's expect better service in term of on-time deliveries which ultimately will facilitate their manufacturing process, hence OEM's have prioritize OFP, CSM and MFM for better level of integration with LSP's.

Table 1: Prioritization of SCMP - [OEM's; n = 12]

SCMP	3 rd Tier	2 nd Tier	1 st Tier	LSP	DL
CRM	3.70/7	2.59/4	1.50/1	3.95/8	1.39/2
CSM	3.28/2	2.38/2	1.53/2	2.75/3	1.38/1
DM	3.59/5	2.71/6	1.92/6	3.49/5	1.47/3
OFF	3.27/1	2.29/1	1.68/3	2.23/2	1.61/4
MFM	3.32/4	2.41/3	1.70/4	2.75/4	2.66/5
SM	3.31/3	2.66/5	1.92/5	2.19/1	1.39/2
PD&C	3.60/6	3.00/7	1.94/7	3.75/6	2.91/6
RM	4.50/8	4.05/8	3.54/8	3.88/7	3.76/7

For 1st tier suppliers, CRM has been recommended as the most crucial SCMP for integration followed by CSM, OFF and MFM. It is imperative to note that in automotive industry of Pakistan, OEM's realize the importance of supplier relationship management (SRM) and hence have strongly recommended CRM, CSM, OFF and MFM as crucial SCMP to be integrated with 1st tier suppliers. Results in Table - 1, provoke the significance of strategic alignment between CRM strategies of 1st tier suppliers with SRM strategies of focal companies. It is worth noting that with 1st tier suppliers, formal interaction at functional level has been recommended for all SCMP except RM. In contrast, comparatively weak integration has been recommended for next tier suppliers i.e. 2nd & 3rd tier suppliers. Despite the fact that generally low level integration has been recommended, still OFF has been recommended as the most beneficial SCMP to be integrated followed by CSM. For next tier suppliers, results highlight the significance of OFF and CSM. In this regard, auto-managers suggest OFF and CSM processes mandatory to integrate across the chain in order to maintain quality and control on supplies. Astonishingly, CRM has been ignored for integration with 2nd & 3rd tier suppliers, because of the fact that majority of 2nd and 3rd tier suppliers are SME's and the scope of their business is limited to their parent companies i.e. OEM's.

4.2) Prioritization of SCMP - 1st Tier Suppliers' Perspective:

Table - 2 present aggregate mean analysis of eighteen 1st tier automotive suppliers and presents their opinion in term of relative significance of each SCMP in context of supply chain integration (SCI). Results disclose

that 1st tier suppliers have recommended CRM as the most beneficial SCMP for integration with OEM's followed by PD&C, OFP, MFM and CSM. Above stated outcomes are in line with the opinion of OEM's those who have recommended CRM or SRM as the most critical/beneficial SCMP for integration with 1st tier suppliers. It is also worth noting that 1st tier suppliers intend to establish strong integration (i.e. functional interaction) almost in all SCMP except RM.

As compared to OEM's, for automotive dealers, DM has been recommended as the most crucial SCMP for integration. Results suggest the need for integrated planning & forecasting between 1st tier suppliers and authorized dealers. It is argued that integrated planning & forecasting can help 1st tier suppliers to reduce possible demand and supply imbalances which can dramatically boost the performance of the entire chain. In addition to DM, 1st tier suppliers have recommended OFP, CSM and CRM as some other key SCMP to be well integrated with authorized dealers. Reason for the prioritization of these processes is because the success of 1st tier supplier is subject to efficient management of these processes at dealers' level; hence, they have prioritized OFP, CSM and CRM for integration.

Table 2: Prioritization of SCMP - [1st Tier Suppliers; n = 18]

SCMP	3 rd Tier	2 nd Tier	OEM's	LSP	DL
CRM	3.96/7	2.85/7	1.67/1	3.82/7	2.50/4
CSM	3.70/3	2.20/4	1.72/5	2.96/2	2.43/3
DM	3.44/2	2.60/6	2.03/7	3.18/3	2.29/1
OFP	3.42/1	1.96/2	1.68/3	2.65/1	2.28/2
MFM	3.86/6	2.47/5	1.71/4	3.75/6	3.53/6
SM	3.79/4	1.91/1	1.83/6	3.66/4	4.01/7
PD&C	3.85/5	2.09/3	1.67/2	3.72/5	3.35/5
RM	4.58/8	4.06/8	3.84/8	4.36/8	4.37/8

On the other hand, for immediate suppliers i.e. 2nd tier suppliers in the chain, 1st tier suppliers have recommended SM as the most critical SCMP for integration. Prioritizing SM as the most beneficial SCMP indicates dedicated involvement and serious concern of 1st tier suppliers towards supplier's selection. Similarly, results also shed light on long term orientation (relationship) of 1st tier suppliers towards their counter parts.

In addition to SM, other processes like OFP, PD&C, CSM and MFM have also been prioritized for integration. Encouragingly, the recommended extent of integration for these processes remained functional interaction. As compared to 2nd tier suppliers, for 3rd tier suppliers and LSP's, OFP has been prioritized for integration followed by DM and CSM respectively. Despite of suggested significance, comparatively low level of integration even in OFP raise many questions. Findings invite the attention of policy markers at 1st tier level to re-asses their linkages (integration) with 3rd tier suppliers and logistics service providers. It is generally believed that success of the chain depends on strong linkages across the chain. In fact, low involvement of 3rd tier suppliers in almost all SCMP can adversely affects the output of the entire chain. Similarly, weak integration with LSP's justifies product delays in the industry; hence, OFP has been prioritized for integration.

4.3) Prioritization of SCMP - 2nd Tier Suppliers' Perspective:

Table - 3 present aggregate mean analysis of sixteen 2nd tier suppliers and presents their opinion in term of relative significance of each SCMP in context of supply chain integration (SCI).

Table 3: Prioritization of SCMP - [2nd Tier Suppliers; n = 16]

SCMP	3 rd Tier	1 st Tier	OEM	LSP	DL
CRM	3.28/7	3.03/7	3.72/7	3.96/4	4.71/7
CSM	2.05/1	2.12/2	3.27/6	3.84/3	4.64/6
DM	2.54/5	2.55/6	2.76/2	4.08/5	4.23/2
OFP	2.30/3	2.16/3	3.16/5	3.82/2	4.30/3
MFM	2.46/4	2.22/4	2.96/3	4.19/6	4.53/4
SM	2.19/2	2.31/5	3.03/4	3.55/1	4.63/5
PD&C	2.89/6	2.01/1	2.72/1	4.26/8	4.18/1
RM	3.71/8	3.76/8	4.11/8	4.22/7	4.71/8

Interestingly, PD&C appear to be the most sensitive SCMP that has been recommended for integration with major supply chain members i.e. 1st tier suppliers, OEM's and authorized dealers. Perhaps, it is due to the fact that majority of 2nd tier suppliers working in Pakistan are SME's and their business success majorly depends on their customers' satisfaction. Therefore, results highlight strong intentions of 2nd tier suppliers

regarding improvement in their production process in view of their customer's opinion and want to produce/assemble according to the specification of their customers. Hence, they have recommended PD&C as the most beneficial SCMP for integration. Results also portrait that 2nd tier suppliers intend to establish deeper relationship (mostly at functional level) only with their immediate customers i.e. 1st tier suppliers, except them, for other chain members, the recommended level of integration seems questionable i.e. transactional/occasional interaction.

Additionally, results in Table - 3 disclose that CSM has been prioritized for integration with 3rd tier suppliers, i.e. immediate suppliers of 2nd tier suppliers. Outcome reflects the need for better services from immediate suppliers. Finally, SM has been recommended for LSP's. Indeed, SM has been prioritized for integration, however, outcome reflects that 2nd tier suppliers have denied the importance of LSP's and hence have recommended just transactional interaction as optimal level in almost all supply chain management processes.

4.4) Prioritization of SCMP - 3rd Tier Suppliers' Perspective:

Table - 4 present aggregate mean analysis of seven 3rd tier suppliers and presents their opinion in term of relative significance of each SCMP in context of supply chain integration (SCI).

Results in Table - 4 disclose that 3rd tier suppliers have recommended CRM as the most beneficial SCMP to be integrated with 1st tier suppliers and OEM's followed by CSM. It means prioritization of CRM & CSM by 3rd tier supplier reflect the need to understand the real need of the customer and offer them best services. Unfortunately, the recommended level of integration both with 1st tier suppliers & OEM's is 'transactional interaction' which may be meaningless and negligible. On the other hand, OFP has been prioritization for LSP's and 2nd tier suppliers i.e. their immediate customers. Comparatively, better level of integration (i.e. operational cooperation) has been recommended for 2nd tier suppliers only, however, for other channel members, recommended level of integration appears quite low (i.e. transactional interaction). Finally, DM has been recommended for authorized dealers; however, allocated mean score is negligible. Amazingly, PD&C has been ignored for integration across the chain and declared among least prioritize supply chain management process.

Table 4: Prioritization of SCMP - [3rd Tier Suppliers; n = 07]

SCMP	2 nd Tier	1 st Tier	OEM	LSP	DL
CRM	3.13/5	3.81/1	4.04/1	4.12/3	4.77/6
CSM	2.62/2	4.20/3	4.26/2	3.70/2	4.79/7
DM	2.88/4	4.21/5	4.31/4	4.26/5	4.69/1
OFF	2.23/1	4.10/2	4.29/3	3.70/1	4.78/5
MFM	2.87/3	4.24/6	4.35/7	4.30/6	4.76/4
SM	4.06/8	4.20/4	4.35/6	4.15/4	4.73/3
PD&C	3.13/6	4.29/7	4.34/5	4.57/8	4.83/8
RM	3.91/7	4.69/8	4.69/8	4.38/7	4.72/2

4.5) Prioritization of SCMP – Dealers Perspective:

Table - 5 present aggregate means analysis of twenty four authorized dealers and presents their opinion in term of relative significance of each SCMP in context of supply chain integration (SCI). It is imperative to note that except OEM's; dealers have recommended transactional interaction as the required level of integration across the entire chain.

Results in Table - 5, portrays supply management as the most sensitive SCMP prioritized for integration with key supply chain players i.e. 1st & 3rd tier suppliers along with OEM's. Supply management has been recommended as the most beneficial process for integration because industry inducts permanent and exclusive dealers for their products. Hence dealers believe, once they being selected through rigorous selection process, OEM's must establish long lasting relations (partnership) with them. As opposed to 1st & 3rd tier suppliers, OFF has been recommended for integration with 2nd tier suppliers. However, low level of integration overlooks the benefits of prioritization of SCMP. Similarly, for LSP's, CSM has been recommended as most beneficial for integration. Results reveal that authorized dealers require better customer services from their logistic service providers.

Table 5: Prioritization of SCMP – [Dealers Perspective; n = 24]

SCMP	3 rd Tier	2 nd Tier	1 st Tier	OEM	LSP
CRM	4.63/6	4.10/2	3.68/4	1.41/3	4.10/5
CSM	4.55/5	4.17/5	2.98/2	1.49/4	2.03/1
DM	4.54/4	4.30/6	3.92/6	1.73/6	3.89/3
OFP	4.53/3	4.05/1	3.46/3	1.31/2	2.76/2
MFM	4.74/7	4.33/7	3.96/7	1.59/5	4.35/7
SM	4.35/1	4.12/3	2.66/1	1.23/1	4.05/4
PD&C	4.51/2	4.13/4	3.92/5	1.98/7	4.26/6
RM	4.83/8	4.76/8	4.36/8	3.89/8	4.35/8

5) CONCLUSION

Findings of this study provide empirical evidences regarding various supply chain management process as per their significance in term of integration across multi-tier extended end-to-end supply chains. Interestingly, except returns management, all the key supply chain management processes i.e. customer relationship management, customer service management, demand management, order fulfillment process, manufacturing flow management, product development & commercialization and supply management were declared critical and beneficial for integration. Outcomes reveal that OEM’s have prioritized CRM for 1st tier suppliers, CSM for dealers, OFP for 2nd & 3rd suppliers and SM for logistics service providers. In contrast, 1st tier suppliers have prioritized CRM for OEM’s, DM for dealers, OFP for 3rd tier & logistics service providers and SM for 2nd tier suppliers. While, 2nd tier suppliers have prioritized CSM for 3rd tier suppliers, SM for logistics service providers and PD&C for OEM’s, 1st tier suppliers, and dealers. Similarly, 3rd tier suppliers have prioritized CRM for 1st tier and OEM’s, OFP for 2nd tier suppliers & logistics service providers and DM for authorized dealers. Lastly, authorized dealers have prioritized CSM for logistic service providers, OFP for 2nd tier suppliers and SM for 3rd & 1st tier suppliers and OEM’s.

Above reported findings disclose variation of thoughts among supply chain members. Different supply chain members have recommended different supply chain processes for integration with their channel partners. The findings of this study provide deep insight regarding

prioritization of various supply chain processes for supply chain integration. Expectedly, all the major supply chain management processes declared crucial/beneficial for integration, however, level of integration vary from process to process among various supply chain players. Though different channel members have prioritized different supply chain processes, astonishingly, level of integration suggested even for prioritized supply chain management process is quite low that invites the attention of policy makers to re-asses their integration & collaboration strategy for the suggested channel partners.

In summary, this study proposed significance of various supply chain management processes in context of supply chain integration. Theoretically, findings of this study provide empirical grounds to extend debate on process view of supply chain integration initially proposed by cooper et al. (1997). Practically, the outcomes of this study help Pakistani's automotive supply chain to identify integration gaps between certain supply chain members. The gaps of integration are useful for Pakistani automotive managers to implement improvement. Above stated findings contribute to the practices as it now reveals the integration gaps in context of various supply chain processes across the entire multi-tier supply chain. With these findings it is then possible for the industry to engage in actions which may bring the supply chain to the next levels of integration.

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