



# Leadership in Supply Chain Management: Role of Gender as Moderator

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The main aim of this empirical research is to investigate the impact of the leadership on supply chain management. In addition to that the study has also investigated the moderating role of gender in the relationship between leadership and supply chain Management. This article has drawn the attention to supply chain management concepts to discuss managing gender diversity. The contribution of the paper will be in the investigation of supply chain management literature through the lenses of supply chain leadership and the role of gender in the relationship of the supply chain and leadership relationship. The study revealed the fact that the leader of the supply chain brings the improvement and the change within the organization. As a result, the productivity and the performance of the organization is increased. In order to achieve high performance, it is important to change every aspect of the supply chain, including processes design. The findings of the study have shown an agreement with the proposed findings of the study.

**Key words:** *supply chain management, leadership, gender.*



## **Introduction**

The pressure on firms is increasing to minimize the cost of supply as suppliers are needed to be leveraged to bring innovation. Meanwhile, risks related to the safety of consumers, reputation of the company and earnings related to corporations is becoming apparent in terms of poor management (Ravet, 2011). The unpredictable challenges, disruptive technologies and competitive pressure are heightened by the volatile commodity pricing. Furthermore, there is also changes in the leverage of the supplier as compared to new opportunities, new challenges and risks. Moreover, there is a need to develop negotiation strategies and make efforts in order to develop and sustain partnership with the supplier (Zamboni, 2011).

Current research has highlighted how globalization has led to the extension of supply chains to involve both customers and suppliers worldwide. Whilst initial gains from organization's going global were realized, these gains were not sustainable. There is no doubt that the impact of the recent economic crisis has been considerable, however another challenge for most organization's is the effectiveness of the managerial decisions within organization's as the nexus of their supply chain networks (Cooper et al, 2016). Cooper (2005) asserts that many companies struggle to effectively optimize their supply chain and attain superior performance.

Supply chains are a network of several companies manufacturing, handling or distributing certain product and/or service. Thus, a supply chain involves multiple companies, and it encompasses the steps different companies take to source goods and/or service from suppliers and sell them to their customers (Cooper et al, 2016). Both industry and academic research communities have a growing interest in the intersection between globalization and supply chains. This reflects the need for businesses to compete using supply chains rather than solely autonomous entities (Lambert, et al 2000). The members of the supply chain should be able to align their capabilities in order to respond to changes in the supply and demand of services and goods (Gligor, et al 2012). Additionally, in order to achieve a competitive advantage in the changing environment, it is important that organizations must be aligned with customers and suppliers so that operations can be coordinated in a collective way and achieve a level of agility beyond that of its competitors (Lin, et al 2006).

The key challenge for organizations is how to make a success out of globalization and supply chain operations (OriAde, et al 2016). In their view, organizations particularly need to leverage their management and leadership capabilities and be more responsive by bleeding



out inefficiencies and injecting continuous improvements into their supply chain offerings. Achieving this superior performance, supply chain relationships proves a considerable and complex challenge to most organizations, in general (Cooper, 2005). Organizations have encountered serious challenges as they seek to develop innovative processes to identify, articulate, and address such issues in order to sustain high performance within their supply chains. Such complex innovations often rely on management's leadership capabilities to set and meet challenging organizational objectives through the effective deployment of resources across the different supply chains for multiple product and service portfolios (Gligor, et al 2012).

The future of every organization is dependent upon the development and retention of good leaders. Further, no standard model of the supply chain exists. Leadership vision is developed by the effective leadership because externals and internal root causes for challenges and risks can easily be identified by them. To acknowledge the capability of the leader is the major challenge for the firm and a pre-requisite in order to sustain the performance of the organization. The difference between superior performance and failure to perform can be related to organization's leadership and decision-making capabilities at senior management levels. Thus, managerial and leadership capabilities is key to effectively manage different supply chains competing for resources within one organization and across organization's in the supply chain network, with resources having to be shared or pooled between supply chains (Gosling, et al 2016).

Over the last three decades, the notion of supply chain management, as a philosophy for integrating supply chain activities and organizations achieving better performance in competitive economies, has been progressively developed. This, along with considerable research, focused on understanding how globalization has increased adverse pressures on organization's and their supply chains, has led to calls from governments, academia, industry and commerce for business managers to rethink the way they conduct their businesses. However, there has been limited empirical research on how managers decision-making and leadership capabilities should be developed to improve supply chain performance and effectiveness (Naslund, et al 2010).

Companies have been managing equal opportunities for at least three decades, but we still see only a handful of exceptional women at the top of organizations. The business case is getting stronger, but it isn't enough just to declare that the company values gender diversity – there needs to be a supply chain in place. Absolutely, key to a successful gender diversity supply chain is a genuine willingness to address the gender issue (Shukla, Sivasankaran & Dasgupta 2018). But this requires vision and leadership, as well as a partnership based on the



interdependence between leaders, HR, line managers and women. A very senior champion with a small task force headed by a proactive delivery-oriented leader can drive it forward, with targets and timeframes specified, and support visible. Getting the women together to hear their views, and genuinely supporting a women's network can help the initiative get off to a good start. It is useful to identify what managers perceive to be the barriers for women, so that interventions can be designed to address their views as well as those of the women (Short, et al 2016).

Although supply chain integration can resolve most poor performance factors, the need for superior managerial and leadership capabilities remains a prerequisite for the efficacy of supply chain performance (Cooper et al, 2016). This article will draw on supply chain management concepts to discuss managing gender diversity. The contribution of the paper will be in the investigation of supply chain management literature through the lenses of supply chain leadership and the role of gender in the relationship of the supply chain and leadership relationship. Through this study a model can be provided for the development of theory towards the learning of the supply chain. There are a number of studies concerning the leadership of organizations but there are very few studies concerning the supply chain of the organization (Gosling, et al 2016). This research could potentially enrich our understanding of the relationship of organizational leadership in SCM systems and the role of gender in this relationship.

## **Literature Review**

In most of the past research on leadership, it is studied as the behaviour and characteristics of the individual. Additionally, their impact on organizations and colleagues is also studied. It is generally believed that leadership plays a key role in the success of the organization and in gaining competitive advantage over the organization (Waldman, et al 2001). Leadership is the main mean to get the work done through others and a very gentle way as well. Researchers have defined leadership as “the process of directing and guiding the behavior of the people in a certain work environment” (Quick, et al 2008). According to this definition of leadership, the organization is seen in multiple ways. Therefore, leadership isn't defined as one variable. In-fact it's the understanding adapting the metaphors of the organization. Leadership is the approach which has the ability to change the values of the others and can send them followers to achieve the organizational goals (Mena, et al 2014).

A number of challenges are faced by the organizational leaders in the 21<sup>st</sup> century. From the strategy point of view, assets of the innovation, mass markets, utilization of the knowledge, capital resources and the leaders of the organizations must also change. It is not the answer to



put the leadership above the smart manager. In order to compete in this era, organizations must increasingly rely on judgement, experience, skills, and knowledge of the people they have.

New Knowledge must be assimilated and created, and innovation must also be encouraged. These organizations must also know how to compete in the marketplace (Dess, et al 2000).

In today's globalization era, employees are the important part of the organization. They are a key determinant of success in which performance of employees is derived by energy, motivation and creativity of the employees (Cross, et al 2003). Therefore, it is important to harness the potentials of the employees to achieve the organizational goals. One of the most important factors of success in the success of an organization is effective leadership. Thus, development of such leadership is critical for the organization (Yukl and Chavez 2002).

One important factor for motivation is leadership. Leadership gives managers the ability to affect the behaviour of their employees in an organization. As it was mentioned before, motivated employees are one of the most important results of effective leadership and thus successful managers are also successful leaders because they have great influence on their employees to help accomplishing organizational goals (Naile, et al 2014).

It is critical for organizations to understand the behaviour of the leaders. For example, offering leadership training programs to a newly hired leaders to groom leadership skills and by offering contextual boundary conditions that are favourable for such kinds of leadership.

To improve the performance of organizations and eliminate the activities that are not value added; supply chain management is the approach based on teams (Sharif, Wahab & Sarip 2017). Thus, supply chain management plays a critical role to improve the performance of organization. This concept has been applied to logistic management and the supply chain in recent studies.

This is not a new idea in which a supply chain competes with another supply chain. Moreover, there exists a large amount of literature regarding supply chain management. The emerging practices of supply chain management involve transfer of knowledge, sustainable practices and dissemination of ideas that are new throughout the supply chain. Therefore, it influences the wider networks (Bruch, et al 2006).

The activities which convert raw material to the final goods and are involved in delivering the goods to the end user, are involved in the supply chain. There are a number of stages in the supply chain in which customers, retailers, distribution centres, warehouses, manufacturers



and suppliers are involved. The marketplace of today is very complex and competitive in which a company needs to develop a very effective and efficient supply chain to gain a competitive advantage. Therefore, supply chain management is a source of competitive advantage in which organizations can survive in the marketplace (Min, et al 2004).

Researchers have defined supply chain management as management of downstream and upstream relationships with customers and suppliers to deliver value to the customers in less cost of the whole supply chain (Mangan and Christopher 2005). In the definition of Stadler (2008), supply chain management is the task of integrating organizational units along a supply chain and coordinating material, information and financial flows in order to fulfil (ultimate) customer demands with the aim of improving the competitiveness of a supply chain as a whole.

There are three levels of hierarchy regarding the activities of supply chain management; namely operational level, tactical level and strategic level in which time is involved from hours to a number of years (Simchi-Levi, et al 2008). Long term decision making is involved at the level of the supply chain in strategic level management in which the objectives of the supply chain are determined and resources are prepared to achieve the objectives (Shapiro, 2004); for instance, network design of supply chain (Georgiadis, et al 2011) and location of facilities (Sousa, et al 2008).

Medium term decisions are involved in the tactical level of decisions regarding the way to conduct the supply chain to ensure efficient and effective resource utilization from the decisions of the strategic level. The time period involves updating the decisions of tactical level over a few weeks to a few years. These decisions involve inventory policies and distribution planning (Selim, et al 2008); (Disney, et al 2003).

Short term decisions are involved at the operational level in which high details of tasks and operations are involved to achieve the tactical level objectives. The time period of tactical level varies from a weekly basis to a daily basis and activities involve scheduling of transport and production (Higgins, et al 2006).

### ***Leadership and supply chain***

The leadership structure is characterized as a component of supply chain management (Cooper, et al 1997); (Stevens, 1989). Researchers revealed that organization will face the situation of chaos and risks if the leadership is not implemented at the level of strategic decision making (Lambert, et al 1998). Leaders of a supply chain can be identified by their



comprehension of trade franchise, customer patronage, economic power and size of inter-firm relationships (Gosling, et al 2016).

On the leadership of individual leadership theory, a number of studies regarding framework of supply chain management are developed. Thus, it has been argued that effective leadership in a supply chain network requires managers to demonstrate behavioural complexity, defined as the ability to act out a cognitively complex strategy by playing multiple, even competing, roles in a highly integrated and complementary way (Hooijberg, et al 1992).

Leadership-focused research and literature describes an effective leader as someone who: 1. Serves the interests that are best for self and organizations 2. Constantly develop best practices and good behaviour 3. Create and seize opportunities 4. Capture the important information and act on it 5. Build the partnership 6. Bring and promote the change 7. Create the vision and promote it (Dubey, et al 2015).

The leader performs all of these tasks to create and realize a supply chain vision that drives the organization's mission and strategy, continuously improves as a leader, and develops talent and future supply chain leaders. These capabilities and goals provide the career path of a supply chain leader. No matter the organizational culture, all organizations recognize the need for good business leaders and leadership. A supply chain leader tailors his or her approach to the organization being served (Defee, 2007).

A number of studies (Cooper, et al 2016); (Bassi and McMurrer 2007) asserts that leadership ability is a main challenge for businesses and a basic requirement to sustain organizational performance and competitiveness in the market. There is a growing recognition that improving leadership needs to extend beyond organizations to collaboration across the wider system, network or value chain they are inextricably linked to. There are several past studies showing a significant relationship between leadership and the supply chain, in social science research (Dubey, et al 2015); (Sharif, et al 2012); (Gosling, et al 2016).

The leaders of a supply chain increase productivity, performance and drive improvement and change by bringing changes in all the areas of a supply chain from process to design, bringing innovation in processes, overcomes weakness, growing loyalty of the team, good timing, careful planning, insight, helping the supply chain in the adoption of new patterns though trust among people and improvement of relations, using available resources, opportunities and talent to execute the mission of organization is accountable for its execution and vision (Andraski, 1998).

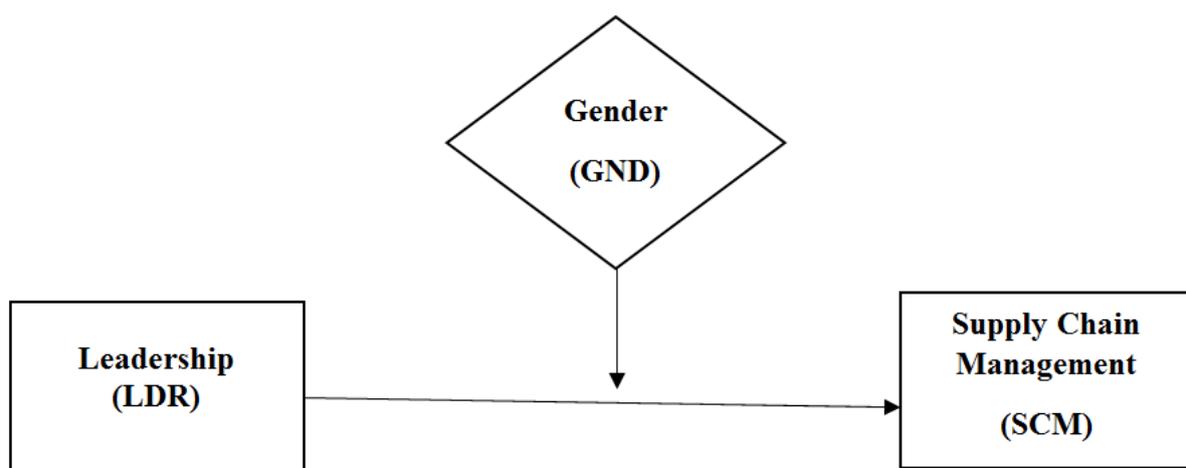
In past literature there exist a lack of understanding among leaders and scholars regarding the behaviour of leaders towards the supply chain management which can bring success for the organizations. The success of an organization is measured through achievements of set goals (Wang and Cruz 2018). A number of studies have been conducted to investigate the relationship of the supply chain management and the leadership roles with the impact of gender on the mentioned relationships.

Thus, whether one sees leadership as part of a set of managerial capabilities (at the individual, organization and interorganizational (network) levels) necessary for SCM or in addition to these, the need for the development of a shared mindset (Dweck,2006) through communication of a shared vision, the facilitating the building of social capital (trusting interpersonal relationships) is at the core of ensuring supply chain effectiveness (Krishnapriya, 2014) and superior supply chain performance (Garengo, et al 2005). Moreover, Gosling, et al (2016) argues that supply chain leadership is a core component of SCM.

### ***Gender, Leadership and Supply chain***

As mentioned by WHO, the roles which are socially constructed are referred to as Gender. It also includes attributes, activities and behaviours which a given society perceive appropriate for women and men (World Health Organization, 2014).

**Figure 1.** Conceptual Framework





Among the constructs, gender is a multidimensional one in which different limitations, responsibilities, experiences and roles are referred too an individual on the basis of Gender or sex. Researchers have defined gender as a ramification of biological sex (Bem, 1974), (Unger, 1979). Generally, the gender is observed by the behaviour of women and men or by simply asking whether they are female or male (Ayman, 2010). A number of theories are produced by the researchers regarding the difference in leadership between women and men.

There exist some serious discussions regarding the topics of leadership and gender because of personal, social, political and professional realities, of the current era. For this reason, a number of researchers have reported significant relationship between these two variables (Shanmugam, et al 2007), (Eklund, et al 2017), (Appelbaum, et al 2003). Some style, perception, substance or reality based (Appelbaum, et al 2003). Several researchers provide argument that there is a biological difference between women and men. For this reason, past research has investigated whether there exists a difference in men and women.

Researchers have demonstrated that there exist similarities in leadership styles regarding men and women which are much higher than the differences. Additionally, their leadership styles are equally effective (Shimanoff, et al 1991).

Therefore, the issues regarding gender and supply chain has been given less attention. It is surprising because women are playing a key role in the development. There may be less conflicts, low level of group cohesiveness and less breakdown of communication due to which the members of the group can discuss stuff openly and clearly, thus having an overall impact on the firm's performance (Sharif, et al 2017).

From the past literature its evident that there is evidence of the link between moderating role of gender on the link of leadership and supply chain management. Though there exists a lot of literature regarding the impact of human interaction through diversity of gender (Shukla, 2018), there is very little research regarding the impact of gender on the practices of supply chain management. In view of the limited research on the diversity of gender in SC, this study attempts to enhance the current understanding in this area. The framework of this research is presented in figure 1.

**H1:** Leadership has a significant impact on supply chain management

**H2:** Gender has a significant impact on supply chain management.

**H3:** Gender moderates the relationship between leadership and supply chain management.



## **Methodology**

This study has employed a survey-based method using an adapted questionnaire. The operational managers, and finance managers working in the manufacturing industry are chosen as a final sample of the current study. The 435 questionnaires were sent to managers of manufacturing firms. The required number was sent to the departments for dispersion. They returned the questionnaire within the period. This procedure took four weeks to gather every one of the questionnaires from the respondents. In this study, researchers have used the questionnaire method for collecting data. This questionnaire is divided into four sections; the entire question was conducted in English. Section A in this questionnaire asked about the respondent's background; gender, ethnicity, educational level, age, marital status, length of services, job category and income (per monthly). Meanwhile, the question from Part B, C and D are the parts of the instrument that were tested for this study. The measurement scale for all the section is based on the Likert Scale of 1 to 5, where 1 = strongly disagreed, 2 = disagreed, 3 = neutral, 4 = agreed and 5 = strongly agreed. 520 respondents were selected to distribute questionnaires. 339 questionnaires were received; the response rate was 69 per cent and hence accepted for further evaluation. Respondents' average age was 47 years, and around 63 percent of them were working in operation departments for the last 15 plus years. The greater part of the respondents held higher degrees; the response rate is above the threshold of 45-50 percent (Lambert, et al 2000). Male respondents consisted of 233 responses and there were 64 female responses. The average working experience was 11 years.

## **Results**

This study adopts the Structural Equation Modelling (SEM) for analysis due to several reasons. SEM is considered to have equal ability with multiple and linear regression analysis which assume that variables are evaluated with no errors. Even though SEM involves multiple regression and factor analyses, it has a more effective way of estimating instruments for a number of separate multiple regression equations which it evaluates concurrently (Hair et al., 1998). There are number of reasons which make PLS-SEM a popular approach among researchers. Several arguments about the reasons of employing PLS by researchers and scholars were assessed (Urbach & Ahleman, 2010). According to Hair et al. (2016), the PLS approach is useful especially when the sole purpose of using structural modelling is to obtain explanation and prediction about the constructs. For this study, the PLS-SEM technique is employed assuming it to be more flexible, demands less in terms of the sample size, and has an ability to handle multiple structural modelling. Moreover, the model is constituted of reflective and formative constructs. The study aims to reflect prediction between the constructs. Hair et al. (2016) also supported the reasoning for employing the Partial Least

Square method. The SEM-PLS approach involves two models i.e. the structural model and the measurement model.

The measurement model shows the relationship among the observed and the latent variables. In estimating the measurement model, changes occur in all items of the model. Therefore, strong correlation is expected to exist between variables and are combined to form a construct. In order to confirm the validation of measurement models, i.e. how well the observed variables represent the constructs, Confirmatory Factor Analysis is done. Under CFA, first and second order constructs are estimated. During estimation of the measurement model, all elements are separately analysed using reflective, formative, and structural modelling.

The Fornell-Larcker criterion of discriminant validity is a powerful measure and has been widely used by the researchers in studies (Chin, and Tat 2015). Discriminant validity measures the association between reflective variables and their constructs. Generally, it operationalizes the variables that are involved in the model. Thus, the current study incorporated this as a threshold for assessing discriminant validity. Value for reliability index is expected to be 0.70 or above. Thus, the value for outer-loadings and cross-loadings turned out to be the same. Since cross loadings analyses the presence of correlation among the constructs, therefore, current study has examined the discriminant validity between the variables and constructs, as shown in table II.

**Table 1:** Convergent and Discriminant Validity

	Indicators	Loadings	CR	AVE
<b>LDR</b>	LDR1	.843	0.895	0.772
	LDR2	.855		
	LDR4	.802		
	LDR5	.925		
<b>GND</b>	GND1	.884	0.932	0.617
	GND3	.955		
<b>SCM</b>	SCM1	.822	0.910	0.671
	SCM2	.855		
	SCM3	.722		
	SCM4	.825		
	SCM5	.841		

	SCM6	.800		
	SCM7	.880		
	SCM8	.881		
	SCM9	.826		
	SCM10	.821		
	SCM13	.882		
	SCM15	.928		
	SCM16	.840		
	SCM17	.921		
	SCM18	.882		

The discriminant validity of the current model is shown in table 2.

**Table 2:** Discriminant Validity

	<b>1</b>	<b>2</b>	<b>3</b>
<b>LDR</b>	<b>0.948</b>		
<b>GND</b>	0.731	<b>0.798</b>	
<b>SCM</b>	0.518	0.550	<b>0.801</b>

The next step, after checking the validity and reliability of instruments, is the estimation of the structured relationship between the variables. Unlike other techniques, the SEM-PLS method observes the simultaneous examination of all the constructed variables. Therefore, the structural model analyses the direct and indirect effects of variables. The structural model is also shown below.

**Table 3:** Direct Effect

	<b>(β)</b>	<b>SD</b>	<b>T-value</b>	<b>P-Values</b>
<b>H1</b>	0.111	0.035	3.161	0.002
<b>H2</b>	0.467	0.132	3.978	0.007

For the purpose of investigating the indirect impact of variable or moderator, moderation level is estimated. In addition, to specify the significance of relationship, bootstrap analysis is employed on samples of 1000 observations. The significance level for the p-value is less than 0.05. Other than H<sub>3</sub>, p-values for all other hypotheses are less than 0.05, indicating the acceptance of hypotheses. Table 4 shows the existence of moderating impact of customer response on the relation of agile SC and external SC performance. Moderation results indicate significant t and p values for both hypotheses. The values for t-test are above 1.96,

while p values also came out to be less than 0.05, resulting in the acceptance of H<sub>3</sub> hypotheses.

**Table 4:** In-Direct Effect through moderation

	( $\beta$ )	SD	T-value	P-Values
<b>H3</b>	0.112	0.021	6.331	0.000

In structural modelling, coefficient of determination or R<sub>2</sub> explains the predictive power of endogenous variables. Closer to 0 value for path coefficients indicate insignificance of coefficients. Value for R<sup>2</sup> also lies between 0-1, value closer to 1 indicate greater predictive accuracy and vice versa. The value of 0.75 indicates substantial predictive power, 0.50 indicates moderate predictive power, while 0.25 indicates weak predictive power. The value for R<sup>2</sup> came out to be 0.642 which shows that environmental uncertainty and GSCI explains 64.2 percent of variation in SP.

**Table 5:** Expected Variance

	R <sup>2</sup>
<b>SCM</b>	64.2%

## Conclusion

This study aims to draw the attention of researchers, policymaker, and corporate personnel towards the issues related to the role of gender in the relationship between leadership and supply chain management. The main purpose of this empirical research is to study the impact of leadership on supply chain management. In addition to that the study has also investigated the moderating role of gender in the relationship between leadership and supply chain Management. This article has drawn attention to supply chain management concepts to discuss managing gender diversity. The contribution of the paper will be in the investigation of supply chain management literature through the lenses of supply chain leadership and the role of gender in the relationship of the supply chain and leadership relationship.

The findings of the study have shown an agreement with the proposed findings of the study. The cash conversion cycle appears as a strong moderator. In author acknowledges that this is among a few pioneering studies on this issue and it will be helpful for policy makers. This study adopts the Structural Equation Modelling (SEM) for analysis for several reasons. SEM is considered to have an equal ability with multiple and linear regression analysis which assumes that variables are evaluated with no errors.



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