Supply Chain Information Integration: Exploring the Role of Institutional Forces and Trust

Masood Nawaz Kalyar, Tahir Naveed, M. Sohaib Anwar, Kamran Iftikhar
College of Management & Administrative Sciences, Government College University Faisalabad

Corresponding author: Masood Nawaz Kalyar, College of Management & Administrative Sciences, Government College University Faisalabad

ABSTRACT
Purpose – The purpose of this study is to investigate the effect of institutional environment on supply chain (SC) information integration of manufacturing firms in Pakistan.

Design/Methodology/Approach – A theoretical framework is used which showing the impact of institutional forces - government support and legal protection- and trust on SC information integration within buyer and supplier firms in Pakistan. The proposed hypotheses were tested by using correlation and regression analysis based on collected data from two hundred and sixty one respondents from thirty randomly selected manufacturing firms.

Findings – The findings of the study describe the impact of institutional forces in Pakistani environment; trust has significant relationship with two elements of information integration, first is information sharing, while second is collaborative planning, which increases the efficiency of the firms. Other two institutional forces government support and legal protection have insignificant relationship with information integration within manufacturing companies of Pakistan.

Research Implications –This study helps the firms in development of collaborative planning and information sharing that increases the profits and decreases the transactional and relational cost. These profits will provide the help to minimize the loss of GDP that Pakistan is bearing 2% of the total GDP that is because of transactional and institutional cost.

Originality/Value –This study provides the information about the institutional forces that help to enhance supply chain operations by developing the information coordination within the supply chain which improve the performance of firms.

Keywords-- Supply chain management, institutional theory, Transactional Cost Analysis, trust, information sharing, and collaborative planning, information integration.
1. Introduction

Information coordination is critical to the development of supply chain management (SCM). The information integration plays a significant role in development and success of the SCM and is the point focused by the researchers now a day. Researchers define the supply chain (SC) as a connectivity of infrastructure and distributions channels that performs the functions of purchase of materials, converting of these raw materials into semi-finished and finished products and the distribution of final products to the customers. As describe the integration of different members and department integrated to each other then these also shows the importance of information integration between them. Another researcher argues about the firm integration that well integrated SC is one of the key business strategies to enhance SC performance. The kinds of information integration across firm’s boundaries can be classified in two key factors: The sharing of information and collaborative planning.

The purpose of this research article is to investigate the influences and effects of the environment of Pakistani companies on the information integration and trust between the supplier and buyers. The force that influence the information integration within the organizations and outside relationships with customers and other firms that are related to the SC and to evaluate institutional forces of the economy that help to develop these relations are main focus of this study. Institutional theory prioritize the sign that organizational decisions base on many economic, social, environmental and political forces influenced by relevant institutes, as well as state and local governments, social network, and other healthy organizations. Different countries have different institutional environments due to the difference in their culture. This shows that the culture have greater impact on the institutional environment.

There are some major institutional forces that are legal protections, government favor and the importance of collaborative relationship that may influence the level
of trust enhanced between buyers and suppliers which can influence the extent of information collaboration, including information sharing and integrated planning among the parties (Cai, Jan and Yang, 2009). The collaborating planning caused the reduction in cost and development of the SC strategies that can decrease the initial cost of the organization reputation and trust and also influenced by the legal institutions that is favored as healthy legal system that decreases transaction uncertainty, decrease the cost of goodwill building, and increase trust in the market environment and involves parties. The government force is also the noticeable to increase trust between firms and members of SC.

The third most noticeable point of research is interpersonal relationship. The term interpersonal relationship describes the importance to which interpersonal relationship is critical to organizations success and is influenced by its institutional environment (Cai, Jun and Yang. 2009). Above three forces of institutions in Pakistan are the focuses of our research to add something new in existing knowledge. These institutional forces that create trust between individuals and firm and make strong SC with information integration and collaborative planning.

2. Literature Review

Institutional theory assumes as a fact that the parties in business influenced by its related institutes (Scot, 2001). The previous cited material has identified many institutional forces. Lane (1997) describes that trade contracts legal rules and regulations and technical levels of standards are caused of greater trust between the trade parties and to work as a companion in Germany as compare with in Britain. Lewin et al. (1999) describes that the nominated forces in the institutional environment of an organization are: rules of state government, lawful rules, culture and the system of education. Similarly, Yeung and Oxley (2001) continued to explain that the claim to payments and lawful rules are important for the development of e-commerce. Two inferences emerge from above studies. First, the institutional forces have many kinds but only some are that impose pressures on
the specific decision by the organization. Second, there are particular institutional forces that some countries have unique like associations in the trade (Lan, 1997).

The previous studies show that some institutional forces are equal and same in different countries. These findings consider many affects of different of institutional forces on the workings of the management but are also compulsory to know that these forces vary firm to firm due to size, location, industry of the firm within a country. In this study the identified institutional forces in Pakistani environment that are support from government and protection by law. Leven et al’s (1999) has developed framework to show the institutional environment economy-wise. The method to adopt institutional forces, two criteria used: the institutional forces strongly influence firms according to their descriptions and between the firms transactional and relational decisions are affected by these forces.

There are three factors of institutions that show different in many countries; this research will study these factors in Pakistani environment. The legislated system is inconsistence that caused different levels of protections (Hsu et al., 2005; Luo, 2003). A strong lawful system decreases the transactional cost, cost of repute of the firm and enhances trust among firms (Dxley and Yeung. 2001). The legal system of Pakistan is neither transparent nor has consistency, due to this different firms are getting different level of legal protection due to their sizes and industries. On the basis of traditional culture, the upper level official enjoyed the power of their status. The words of the leader are rule and work of official is only to literate people about the rule. Government gives financial benefits, reduction in the interest rates and loans for the banks which owned by the state of Pakistan.

In the territories that are very open the firms remains an arms-length in relationship with other firms and in the close economies the companies make collaborative planning’s and are also with government officials making collaborative planning (Park and Lou, 2001; Pannet and Yu 1990).
2.1 Important Factors for Information Integration

Information integration depends on the cooperation in planning and sharing of the information (cai, Jung and Yang, 2010). The sharing of information includes the telephonic, personal meetings, and electronic sources of information sharing (Mohr and Spekman, 1994). The supply chain (SC) workings can be enhanced through delivering the information firm to firm, like planning of SC and JIT production (Behton and Zho, 2007). The information kinds that can be exchange may includes research on consumer, material and refilling of stock, capital performance, growth path, structure of overhead cost, capacity planning or technology in use (Kulp et al., 2004). So, that the success of a business depends on the frequency of information sharing that is informal and without stress (Mohr et al., 1996). In Pakistani environment, the firms’ information integration is influenced by the government protection policies.
Collaborating planning defines the mutual understanding among the business partners in business processes like the launching of the new product, capacity planning, inventory cycles among the members of supply chain and cooperation in promotional strategies (Cai, Jun and Yang, 2010). Cai, Jan and Yang (2010) suggest that firm involve in collaboration planning for getting competitive edge against their rivals and use it as a key to competitive edge. For the information integration, the most important thing is sharing of information among the people of interest of an organization that are involve in SC and these members cannot get competitive edge against their rivals without the planning with collaboration.
Trust is a term to define the expectations of one firm on other firms to not be heart the expectation either that firm has opportunity to get benefit by defeating and teasing you, fairly talking, fulfill responsibilities for the cooperative environment (Zaheer et al., 1998). In common settings of a firm, the researchers define the trust on the basis of expectation of preliminary considered actions practiced by other parties of interest (Hansen and Burney, 1994). The main role of the trust is to act and serve as a mechanism of governance that eliminate opportunism (Doney and cannon, 1997) and without the threat of opportunism, the trust is not compulsory in firm’s cooperative settings (Chiles and Mickmakin, 1996).

Trust is useful to help in the protection transactional-particular investments which are given assets like human and infrastructure and becomes sunk cost if that particular relationship brokers (Grove and Malhotr, 2003). The classic transactional-cost act view relies on the assumptions that are economic oriented that transact partners that are distrustful (Bamey and Hansey, 1994). In contrast of TCA researchers argue that the trust helps in transactions ease and building relationships that minimize the cost of transactions by minimizing the environment and behavior to tease other firm for getting opportunities due to the relationships (Note boom et al., 1997). A number of researchers suggest that as a factor that enhances confidence and behavior of combined planning decrease the transactional cost decrease the risks related to the relationships that makes the management effective by collaboration creation between supply chain firms (Irelang and web, 2007; Zaheer and Vankatrman, 1995). There are many theories related to the organizations including ISA that fails to describe how trust can be create in the SC (Ireland and Web, 2007).

In the development of relationship among the firms, there are three important and nominated perspectives which are: first is the process-based which defines trust enhance from the past exchange; second, characteristics-based, according to this the trust develop due to individual characteristics; third, institutional-based, according to this trust can be enhance due to institutional environment that includes legal,
social and political system and accept social behaviors (Zaheer and Zaheer, 2006; Zuker, 1986). Some researchers combine the institutional forces with economic theories to build the trust between the firms (Barny and Hansen, 1994; Dony and Canon, 1997).

Dony and Canon (1997) combine characteristics and process views to analyze the important factors that have significant affect on trust such as the reputation of SC members, size and working that create trust. Adopting related or same approach Ireland and Web (2007) identify different four techniques that can be use to enhance the trust among supply chain members combine identify informed by the Sc members to others members, within the SC expanders of boundaries, power to decisions and justice. However in the perspective of institutional-based the most essential factor provided in the society that is trust (Zuker, 1986). Other prospective is process-based that relies on the previous and future expected transaction and information exchanges between the organizations and individuals instead of relationship between institutions and their outside environment while the characteristic-based study focus of the individuals and learning departments (Cai, Jun and Yang, 2010).

### 2.2 Influence of the Institutional-Forces on the element of Trust

Institutional forces have significant effect on the building of trust (Zaher and Zaheer, 2006). When firms do strategic decisions for the exchange of trust, their practice depends on the environment of institutions, and in Pakistan the trust building depends interpersonal relationships, support from the government and protection by law that enhance beliefs on other parties involve in SC. The firms trust based on legal protection can be comparable with the recognition of trust based on formal procedures within an organization (Kramer, 1999) and noticed values related to the punishment related with the violation of that particular rules (Magur et al., 2001). In an organization already explained rule and promises develop an understanding of particular behavior and according to (Kramer, 1999)
within organization the expected beliefs and action based on trust could be established. But it requires that the trustier must be trust on the trustee and in a specific way behave with them instead of bear cost of other actions (Cai, Jan and Yong, 2010).

There are three causes that the protection by law is critical: 1 the boundaries of different firms and individuals behavior remain stable, 2 it protects trust from hearted by anyone and reduce the cost reputation building, 3 it affects the thinking and develop the trust between parties (Oxley and Yaung, 2010). It also provides bases to evaluate total cost and earning benefits from the behaviors (Cai, Jan and Yaung, 2010).

Strong environment of business protection by law encourages consistent, and future business environment and thus firms accepts and believe on trust of one another while legal system encourage their firms in the time when one firm is not agree to believe on relationship (Cai, Jan and yaung, 2010). According to Arrightti et al (1997) compared the system of law of three different countries, according to the findings Germany working groups like the cooperate environment and indulge in mutual decision making while Italy lawful environment consider it most risky to trust other firms for cooperation and in Pakistan there are different levels of trust on the basis of sizes and origins of the firms. For this purpose of analysis the trust in Pakistani environment, use hypothesis.

**H1.** There is positive relationship between the legal protection and trust that Pakistani firms receive.

Second, the support from the government can affect the firm’s decisions to develop trust with the members of supply chain and trading in the time of conflict. There is an opportunity for Pakistani firms to get help from the government due to the government control on the country and not existence of universal system of law in Pakistan. The support from the government proactively may provide a mechanism created by the government that help elimination of firm’s conflict and control their
behavior. Pakistani working groups prefer that government help them to eliminate the disputes that firms are facing and trust. In elimination of opportunism, firms consider government support a source of development in relationship through trust among supplier firms. The study on the basis that Pakistani firms consider government support a source most trust on their supplier firms than others that have not getting this support, a hypothesis developed to analyze this that is

**H2.** Trust on supplier and government support firms receive has positive relationship.

### 2.3 Interpersonal firms information sharing and trust

There is a positive relationship between sharing of information and planning collaboration (Heide and John, 1990; Zaheer et al., 1998). Information sharing is practices which provide opportunity to other firms to get benefit by defeating the firm, with trust the firms have confidence that other parties will use information appropriately for mutual benefits. Trust also provides control on some planning processes that are initial step for collaborative planning (Hied and John, 1990). Trust gives flexibilities in providing concessions, if some uncertainties occur (Zaheer et al., 1998). The research tests the significant of trust on collaborative planning and sharing of information. For this purpose, it is hypothesized that:

**H3.** Trust between the Pakistani firms with their suppliers has positive relationship with information sharing.

**H4.** Trust between the Pakistani firms in their supply chain has positive relationship with collaborative planning.

First four hypotheses show the direct effect of two forces and trust is mediating variable. The effect of institutional forces that are two in number have directly influence two element of information. The information sharing and cooperation in planning increase when supply chain partners develop formal ways to regulate the efforts related to their information integration. When firms get the protection based
on trust, an environment develops through the legal contracts that help in completion future responsibilities (Abramson and Ai, 1997). Legal contracts provide help trading parties and motivate them and also have positive effect on two elements of information integration. So that hypothesized that:

**H5.** Protection by law has positive relationship with information sharing with supplier that firms receive in Pakistan.

**H6.** Protection received from law by Pakistani firms has positive relationship with collaborative planning.

Second, the Pakistani government is making policies to build cooperative environment between the SC firms. According to Xu et al (2006) the policy of government help to save the environment influenced on firms to build cooperation in adopting environmental protection technologies. Official bodies work with the people that produce agriculture products to motivate the customer to make SC partnership (Heliangjeang Grain Bureau, 2008). With the delegation of authority, the local officials of government find themselves involved in decision making processes of different firms locally. Through the cooperative workings with government officials get information that proves beneficial in their commercial success as the how know about the changes in government policies and practices related to the management provides competitive edge against their rivals.

The supply chain working can be improve if a firm shares information to its member and through their collaboration the performance can be improve of SC. The study assumes the sharing of information effectiveness with the help of collaboration enhancement that caused information sharing. So, that hypothesis develops:

**H7.** Information sharing and support from government, that firms receive, have positive relationship in Pakistan.
H8. Collaboration in planning and government support that firms receive has positive relationship in Pakistani.

3. Research Methodology

3.1 Data collection and sample

This study involves analysis of a questionnaire that consists of statements relating to legal protection and government support, trust, information sharing and collaborative planning. All the items were measured at five point likert scale that has 5 options: strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree. For the purpose, the instrument was adopted from Cai et al. (2010). The data was collected from 261 respondents from thirty randomly selected manufacturing organizations in Pakistan. The respondents were given assurance according to their privacy, confidentiality and independency of the researchers from their organization. The subject of study was employees those have five years or above experience in that firm. These were managers, assistant managers and purchasing managers belonging to the manufacturing marketing, purchasing and logistics departments of these firms. Two hundred and sixty six questionnaires got filled and returned, out of which only five were not complete from all aspects thus unusable for further analysis.

3.2 Data Analysis

In order to test the hypotheses correlation and regression analysis were applied on quantitative data. Unmanaged data was set and inputted to generate descriptive statistics, which include mean, standard deviation and correlation coefficient. Table 1 presents Mean, Standard deviation and Correlation and coefficient.
### Table 1: Mean, S.D and Correlation

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legal Protection</td>
<td>3.804</td>
<td>0.714</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government Support</td>
<td>2.820</td>
<td>0.801</td>
<td>0.071</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trust</td>
<td>3.583</td>
<td>0.682</td>
<td>0.516**(*)</td>
<td>0.168</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information Sharing</td>
<td>3.55</td>
<td>0.525</td>
<td>0.463**(*)</td>
<td>-0.049</td>
<td>0.444(*)</td>
<td></td>
</tr>
<tr>
<td>Collaborative Planning</td>
<td>3.687</td>
<td>0.732</td>
<td>0.182</td>
<td>0.098</td>
<td>0.469(**)</td>
<td>0.221</td>
</tr>
</tbody>
</table>

** p< 0.01, *p< 0.05, N=61

The Pearson coefficient of correlation for Legal protection and government support correlation of (r= .071, p>0.01). Legal protection and trust have correlation (r=0.516, p<0.01). Legal protection and information sharing (r=0.463, p<0.01). Legal protection and collaborative planning (r=0.182, p>0.01). Government support and trust (r=0.168,p>0.01). Government support and information sharing (r= -0.049, p<0.05). Government support and collaborative planning (r=0.098, p>0.01). Trust and information sharing (r=0.444, p<0.05). Trust and collaborative planning (r=0.469, p<0.01). Information sharing and collaborative planning (r= 0.221, p>0.01). The data supports only four hypotheses that are H1, H3, H4 and H5.
Table 2: Regression Analysis

<table>
<thead>
<tr>
<th></th>
<th>Information Sharing</th>
<th></th>
<th>Collaborative Planning</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unstd. Beta</td>
<td>t</td>
<td>S.E.</td>
<td>Unstd. Beta</td>
</tr>
<tr>
<td>Legal Protection</td>
<td>.232</td>
<td>1.692</td>
<td>.102</td>
<td>.199</td>
</tr>
<tr>
<td>Government Support</td>
<td>-.080</td>
<td>-.752</td>
<td>.459</td>
<td>.154</td>
</tr>
<tr>
<td>Trust</td>
<td>.232*</td>
<td>2.995</td>
<td>.022</td>
<td>.211*</td>
</tr>
</tbody>
</table>

R= .534

R-Square= .286

F= 3.731

R=.475

R Square= .225

F= 2.716

*p<0.05

To further explore the influence of Government help, legal protection and trust on information integration (information sharing and collaborative planning), regression analysis was used. Two separate analyses were run: one for information sharing and other for collaborative planning. The results show that only trust has positive and statistically significant influence on both information sharing and collaborative planning. Unstandardized beta coefficients of legal protection and government support are insignificant for both collaborative planning and information sharing suggesting that these two predictors have no influence on information integration in Pakistan. As the literature suggests the positive impact of the institutional forces on information integration that this impact results in information sharing and collaborative planning on broader spectrum and ultimately provides a way to firm’s efficiency. Although correlation analysis of data proposes positive linkages between trust and information sharing, trust and collaborative planning and legal protection and information sharing, however, regression
analysis suggests that there is only one variable which significantly regresses the dependent variables that is trust.

4. Discussions and Conclusion

4.1 Theoretical implications

In this study, results found, in Pakistan, there are two institutional forces; government support and legal protection that have no effect on information sharing and collaborative planning. Contrary to it, trust has positive impact on both information sharing and collaborative planning. These results show that there is no government involvement in information sharing and collaborative planning. The institutional environment of Pakistan is preferred to trust for information integration and collaborative planning with supply chain firms, and other firms that are interested in their activities rather to rely on Government support and legal protection.

The steps that government has to take are: provision of government support and implementations on procedures of legal protection in Pakistani environment. For example, west countries are involved in and founded in rule of law and the people that make law are surrounded in ethically and usually politically by these rules (Lubman, 1999).

In the west countries, the acceptability of universal laws, rules and regulations are critical to establish trust that help to information sharing and collaborative planning, because formal contracts and legal safety play role as a tool of reinforcing the conditions of transactions (Lane, 1997; Lane and Bachmann, 1996). In the case of Pakistan, disputing parties tend to show a willingness to find mutually acceptable solutions with the help of informal social networks; Pakistani culture perceives open conflicts as a symptom of interpersonal hospitality. A report from international conference and exhibition of logistics and supply chain (ICLSC) held
in Lahore in 2011 where Pakistan’s leading logistics and supply chain management experts have observed that the government’s lack of support to the logistics and supply chain management has been causing a loss of 2 per cent of the Gross Domestic Product (GDP) per annum. Tahir Malik, Chairman ACAAP, also criticized the government for failing to cater to improve the air freight to support business community, which was contributing billions in taxes every year. Due to lack of facilitation in air freight by the government, he said that the business community was inclined to go for foreign carriers and providing a business of $1.5 billion per annum to various foreign airlines. He stressed the need to establish a proper cargo complex to house costly export goods including leather, textile, surgical and sports goods as well as livestock (Malik, 2011).

When institutional forces have direct impact on information integration, the legal protection has no direct impact on information sharing and collaborative planning’s. Therefore, to contract on draft those describe future contingences for the information integration and causing the both universal and formal rules and neglecting the legal protection and contracts that causes the high risks for Pakistani firms.

4.2 Managerial implications

In Pakistan, the findings of this research describe that the collaborative planning and information sharing with the parties that are interested in a business are most critical for the managers. The collaborative planning and information sharing causes the increase in the profits and decrease in the transaction and relational cost and also increases the profit of the firms. So the firms must have to rely on collaborative planning and information sharing for the maximization of performance and to achieve the long term relationships that lead to profit maximization. At the existing situation, the insufficient legal system and government support encourage the firms to depend on the trust to achieve their goals and safeguard to their interests. So by themselves, the firms must share
information and plan collaboratively only with those firms on which they have trust. The managers must take an account the changing’s in institutional environment to adopt the effective and efficient means to build strong supply chain with the protection of their interests. They must have to get awareness of Pakistani institutional environment before the adoption of any SC practices. Pakistan has been incurring a loss of about $3 billion per annum on account of infrastructure and industrial corrosion and it needs a comprehensive "national strategy" for corrosion control.

This paper also describes the inefficient management by government and its runners. They are not supporting the firms in building relationships with other firms of interests. The full legal protection is also not available to the firms so they could enhance their businesses with collaborative planning and information sharing. Government can enhance GDP by supporting the firms with different type of facilities like infrastructure facilities, logistics facilities, and reductions in the taxes and with the availability of electricity and gas.

4.3 Limitations and future research directions

For the further studies, there are a number of limitations in our research. First, the research was conducted on the firms that are manufacturing on contracts. So, these firms are buyers for domestic firms, that supply them raw materials, as well as suppliers for foreign companies to whom they provide end product. In future, research could investigate the other manufacturing and service oriented industry by using the information of Pakistani institutional environment, provided in this paper with a large sample size. Second, this study was conducted in Pakistan and this study can be carried out on other countries because the institutional environment changes country to country. This study is cross-sectional that have the future ways to find the functionality forces of institutional environment with longitudinal studies. The longitudinal research can be helpful in finding the dynamic nature of effects of the forces of institutions and their impact on SCM practices in Pakistan.
Last but not least, this study provides the ways for future research to investigate further factors the will caused the enhancement in information sharing and collaborative planning between supply chain firms in Pakistan.

References


