

Quality Management as Driver of Vertical Integration in Service Chain: A Study of 3rd Party Logistics Industry

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ABSTRACT

Third Party Logistics (3PL) is one of the fastest growing service industry but still the impact of the application of Quality Management Practices (QMPs) particularly on the integration capability of 3PL service providers in the supply chain is not a well-researched topic. Especially in the context of Pakistan, very little empirical work is found dealing with this very important service competency of 3PL. This research is carried out to determine how QMPs help 3PL Service Providers achieving integration competency in the service chain. The quality management dimensions of internationally recognized Malcolm Baldrige National Quality (MBNQA) model are used as independent variable to assess their impact on the integration competency of 3PLs in Pakistan. Considering the typical business culture and industry environment in Pakistan, the effect of Social Capital and Companies' Internal Strength as moderating variables was also observed. Using questionnaire as a tool, the quantitative data on various items for latent constructs was collected from more than 176 logistics firms of Pakistan. Results clearly identified the Strategic Planning, HR Management Focus and Process Management as the factors highly impacting Integration Competency of 3PL service providers in Pakistan. Interestingly, but surprisingly, the role of Leadership and Knowledge Management was insignificant in this particular setting. The moderating variable also showed a significant impact on integration competency. This study highlighted the areas where logistics firms in their individual capacity and logistics industry as a whole should immediately concentrate to enhance this important competency.

Keywords: *integration, LSP, quality management, 3PL, MBNQA, service chain*

1. INTRODUCTION

1.1 Background

Importance of quality management and its impact on the performance of businesses has been widely researched and plethora of literature is available on this topic (Ali, 2014; Czajkowska & Stasiak-Betlejewska, 2015; Fotopoulos & Psomas, 2010; Jaafreh & Al-abedallat, 2012; Nguyen, Phan & Matsui, 2018). Simultaneously many researchers, (Gavrea, Ilies & Stegorean, 2011; Karia & Wong, 2013; Karia, Wong, Asaari & Lai, 2015; Kraja & Osmani, 2015), have emphasized the importance of service competencies as a tool to get competitive advantage for better performance, but the direct impact of quality management practices on the integration capability of Logistics Service Providers (LSPs) is not duly researched. Gupta, Singh and Suri (2018) quoted a comprehensive definition as initially presented by Huo and Wei that logistics outsourcing is a long-term cooperation between a shipper and LSP for mutual benefit coming out of their mutual integration. Kalinzi (2016) elaborating the motives why manufacturers and shippers outsource logistics service divided them into four major categories namely financial factors, service competencies, flexibility and focus on core activities. Out of these four categories, except for financial factor, the other three categories are somehow related to services and their quality. According to Goldsby and Stank (2000), integration is one of the most important competencies which is the name of an ideal and smooth coordination between LSP's internal functional stages with those of clients and other entities in the chain of operation.

Porter (2019) mentioned that supply chain integration initially started with a system perspective believing that an integrated process results better than segregated functions. Fabbe-Costes and Roussat (2011) referring various researchers and discussing the role of integration mentioned that Integration within the chain of operation is considered to be of strategic and operational importance. Khan and Wisner (2019) defining integration mentioned that it is the amalgamation of partnering firms with the intention to provide more value to the outcome.

Although many publications since the 2000s have studied supply chain integration but how a good quality management practice works as a driver for better integration with vertical partners in the service chain is not duly researched. Once it is determined how a quality management helps in achieving an intense integration between the shipper and 3rd party logistics service providers it might help the whole chain with a better competitive advantage. According to Gupta, Sigh and Suri (2018), especially in this era of fast technological advancement, growth of ICT and rapid globalization, organizations are giving more importance to service integration through quality management. Ding (2011) while studying the factors affecting logistics service competencies, along with quality management practices, also emphasizes the moderating impact of social capital on overall service competencies

The objective of this research is to provide an empirical support for the relationship between QMPs and the integration competency especially in the context of LSPs. During the course, this study also tried to observe the moderating effect of LSPs' social capital (in Chinese called as *guanxi* culture) and internal tangible strength on their integrating competency. Through this research an effort is made to find out the answer of the following basic research questions in the context of 3PL industry.

1. Do QMPs, in general, help enhancing the Integration Competency of 3PL Service Providers?
2. Which Quality Management Practices specifically positively impact the Integration Competency of 3PL Service Providers?
3. Do LSP's internal tangible assets and social capital, as moderating variables, further strengthen the impact of QMPs on the Integration Competency of 3PL Service Providers?

It was hoped that an empirically evidenced answer to above questions will help to determine the extent of the impact of QMPs on the integration capability and to identify those specific practice which influence this competency most in the context of LSPs in Pakistan. The rest of the paper proceeds as follows. The next section reviews prior literature with an emphasis on the various quality management variables and integrating capability. Section 3 presents the theoretical framework for this research. Section 4 discusses the method and results of statistical analysis are presented in Section 5. At the end in Section 5 the outcome of this research is discussed.

2. LITERATURE

According to Mollenkopf and Dapiran (2005) one of the main streams of logistics research, introduced in 1995 by

The Michigan State University Global Logistics Research Team (MSUGLRT), after many years of rigorous research work, climaxed in the shape of 21st Century Logistics Framework which is referred as World Class Logistics Competencies Model (WCLCM). Just after the inception of MSUGLRT logistics competency model researchers like Cho, Ozment and Sink (2008), Ding, Kam and Lalwani (2012), Goldsby and Stank (2000), Kuo-Chung & Li-Fang (2004), Li and Lin (2006), Lynch, Keller and Ozment (2000), Shang and Marlow (2007) and Zhao, Droge and Stank (2001) discussing the WCLCMs, considered MSUGLRT logistics competency model as the most famous, thorough and appropriate logistics service competency model. Xu and Wang (2012) claimed it to be so far the largest study which determined 17 general-purpose logistics capabilities from 32 possible elements of logistics service competencies. This model included and emphasized four major types of competencies which LSPs need to develop. These four famous competencies were called *Positioning Competency*, *Integration Competency*, *Agility Competency* and *Measurement Competency*. Integration competency basically relates to the techniques adopted for achieving excellence both internally within organization and in external relationship with other supply chain partners. Shang & Marlow (2007) in their research used all four logistics competencies identified in the WCLCM and found their significant relationship with operational performance but not with financial performance although the two performances were found positively associated with each other. It shows that strong logistics competencies guarantee a better performance. McKinnon, Flöthmann, Hoberg and Busch (2017) in a World Bank study discussed various logistics competencies but they confined their focus only on one perspective and that was the workforce and their skills. All four logistics service competencies included in WCLCM were initially tested by Stank and Lackey (1997) who found and confirmed that integration and agility competencies were very important to exhibit a better performance. All above researchers used and explained what logistics competency is comprised of, but most of them used and treated various service competencies as part of one bigger unit and collectively called that a model. This researcher did not find any evidences in contemporary research where QMPs are studied as driver or enhancer of integration capability of 3PL service providers within service chain.

2.1 Integration Competency

Li and Lin (as cited by Aishah, Pyeman & Tajuddin, 2013) mentioned that in order to enhance the overall competence of any operational chain, LSPs must have all four competencies which are integration, positioning, agility and measurement competencies but integration is the most important technique for the success of external chain relationships and simultaneously to achieve excellence in internal operations. Sridevi and Kumar (2015) although specifically worked on integration competency but they looked at it through the lens of customer satisfaction and cooperation with other partners in the value chain and not from the perspective of the impact of quality management on this competency. In the context of management Mollenkopf and Dapiran (2005), focusing at the logistics competency framework with a broader view, classified competencies into

three major categories and named them as operational, planning and relational competencies. The operational competencies mainly included *Supplier Integration* which refers to the competency of integrating the externally performed work in the upstream chain members with internal operational stages, *Internal Integration* is the competency of integrating all internally performed procedures and functions into a unified process to enhance the value of services to meet customer needs and satisfaction while *Customer Integration* is the competency of creating a long-lasting competitive and distinctive uniqueness with customers.

As referred above Sridevi and Kumar (2015) confined their research only to Information Communication Technology (ICT) as a single mean of getting integration competency through customer satisfaction but ICT capabilities in isolation with quality of internal processes would not get a logical conclusion. Chin, Hamid, Raslic and Heng (2014) in their study, in the context of Malaysia, found an empirical evidence for the important role played by integration in strengthening the mutual relationship between chain partners and in enhancing operational capability of the whole chain. According to Goldsby, and Stank (2000), integration is the process of establishing a link between what is to be done and how it is to be done. Kasemsap (2017) also supported this view and mentioned that when companies link their business process with external service providers and customers, they not only reduce cost but improve their service level. In summary it is LSP's ability through which they integrate their internal resources and processes with customers' business objectives. According to Zhang, and Okoroafo (2015), since the business logistics is primarily the name of moving products between various partners within the chain, so the major issue is the complete integration of partners' needs with the resources and processes of LSPs. This research although emphasized the importance of processes but did not specifically study managerial processes. Zhang and Okoroafo (2015) in a conceptual frame work for 3PL, discussing the importance of integration, mentioned that in a supply chain the 3PL must have the integrating capability to share and receive information with their clients in order to be able to improve the level of their service. Alam, Bagchi, Kim, Mitra & Seabra (2014) studying the impacts of supplier involvement, length of relationship, information technology and logistics integration competency on the success of supply chain management found that, in comparison to other factors, logistics integration has very significant impact on the success of supply chain and as a moderating factor it positively improves the impact of other factors on the success of logistics value chain.. The whole literature reviewed and referred above, no doubt, emphasized the importance of integration competency for the success of chain partners but what lacked here was the recipe or strategy how to achieve integration competency. Surprisingly, most of the studies did not discuss what managerial capabilities and which management practices help developing integrating competency.

2.2 Quality Management Practices

Singh (2010), emphasizing the need of quality, mentioned that in today's competitive world quality is the main key to have and maintain competitiveness. According to Jaafreh and Al-abedallat (2012) in contemporary research

various Quality Management Practices (QMPs) and Business Excellence Models (BEMs) are proposed by different researchers and national and international bodies to help organizations improve their performance. Many management practices and models drew substantial attention of management researchers and practitioners in recent years. Pathak (2014) did a comparative analysis of few international and regional BEMs and QMPs. This researcher while reviewing related material found a discussion on many internationally renowned and regionally adopted and applied QMPs and BEMs. Akyuz (2015), Brown (2014), Cauchick Miguel (2001), Davies (2004), Hussein (2014), Poon and Tong (2012) analyzed and advocated different quality models in different studies at different timings, Malcolm Baldrige National Quality Award (MBNQA), European Foundation Quality Management Model (EFQM), Canadian Framework for Business Excellence (CFBE), Australian Businesses Excellence Framework (ABEF), Malaysian Business Excellence Framework (MBEF), Singapore Quality Class Business Excellence Framework (SQCBEF) Egyptian Quality Award (EQA); Hong Kong Quality Award (HKQA); Japan Quality Award (JQA); New Zealand Business Excellence Award (NZBEA); are few of the renowned and well researched models. There are numerous other BEMs developed and used in other Asian countries and especially the member countries of Asia Productivity Organization (APO) which include Bangladesh, Cambodia, China, Fiji, India, Indonesia, Iran, Korea, Laos, Mongolia, Nepal, Pakistan, Philippines, Sri Lanka, Thailand and Vietnam (Mann, Mohammad & Theresa, 2013). This researcher, while scanning various quality management frameworks, did not find much difference between them and noted that almost all of them, more or less, are based and evolved around the same dimensions of quality management. The only difference noticed was that different BEMs and quality award criteria tried to accommodate some regional or local business needs. It was also noticed that most of the BEMs revolved around the standards and practices identified by MBNQA which, according to Lee and Ooi (2015), was initiated by US Congress in 1987. **Table 1** shows the dimensions used by few of the quality models mentioned above. Deming Prize, EFQM and MBNQA are three widely used and recognized models, out of which MBNQA is the most researched and discussed model in contemporary literature. Still it cannot be claimed that MBNQA is an ideal model for all firms all the time. Dahlgaard, Chen, Jang, Banegas and Dahlgaard-Park (2013) mentioned that looking at the poor performance of MBNQA winner companies like Cadillac, Federal Express, Wallace and Motorola, a future success cannot be guaranteed for companies adopting QMPs criteria identified by MBNQA.

Hongyi (2014) reviewing the validity of MBNQA model discussed its basic dimensions which are *leadership, strategic planning, customer and market focus, measurement analysis and knowledge management, human resource focus, process management* and then business results. Many other researchers have used these dimensions as standard quality management practice and defined them differently. **Table 2** shows brief definitions of quality dimensions of MBNQA model.

There is plethora of literature available on this quality framework and its different dimensions. Performance of any business usually depends on its competitive excellence

which comes from its competencies of product and services and resultantly enhances customer satisfaction. Not many studies were found studying the impact of QMPs on service

competencies and no research was found exploring the impact of QMPs on the integration competency of LSPs and especially in the context of Pakistan.

Table 1 Quality models and criteria

Quality Model	Criterion
Australian Business Excellence Framework (ABEF)	Leadership; Customer and Market Focus; Strategy and Planning; People; Information and Knowledge; Process Management; Improvement; Innovation and Success; Sustainability
Canadian Framework for Business Excellence (CFBE)	Leadership; Planning; Customer Focus; People Focus; Process Management; Supplier Focus
Egyptian Quality Award (EQA)	Leadership; Planning; Customer and market focus; Information and analysis; Human resources; Process management; Business results
European Foundation Quality Management Model (EFQMA)	Leadership; Policy and Strategy; People; Partnerships and Resources; Processes; Customer Results; People Results; Society Results and Key Performance Results
Hong Kong Quality Management Award (HKQMA)	Leadership; Strategic planning; Customer and market focus; Information and analysis; Human resource focus; Process management; Business results
Japan Quality Award (JQA)	Management vision and leadership; Strategic planning and development; Understanding customer and market and action taken; Information sharing and utilization; Human resource development and learning environment; Process management; Results of enterprise activities; Customer satisfaction
Malaysian Business Excellence Framework	Leadership; Planning; Information; Customer; People; Process; Results.
Malcolm Baldrige National Quality Award (MNQA)	Leadership; Strategic planning; Customer and market focus; Information and analysis; Human resource focus; Process management; Business results
New Zealand Business Excellence Award (NZBEA)	Leadership; Strategic planning; Customer and market focus; Measurement, analysis and knowledge management; Human resource focus; Process management; Business results
Singapore Quality Class Business Excellence Framework (SQCBEF)	Leadership; Planning; Information; People; Processes; Customers; Results

Source: Compiled based on review of various research work

Table 2 Malcolm Baldrige quality dimensions

Leadership	How do an organization's senior leaders guide and sustain that organization? The criterion also examines the organizations' governance structures and looks at how it addresses its ethical, legal and community responsibilities.
Strategic Planning	How does an organization develop strategic objectives and action plans? The criterion examines how they are deployed and changed (when circumstances dictate) and looks at how progress is measured.
Customer & Market Focus	How does an organization determine the requirements, needs, expectations and preferences of its customers and the market? This criterion examines how the organization builds relationships with the customers and determines the key factors that lead to customer acquisition, satisfaction, loyalty and retention, as well as to business expansion and sustainability.
Measurement, Analysis, and Knowledge Management	How does an organization select, gather, analyze, manage and improve its data, information and knowledge assets, and how does it manage its information technology? This criterion also looks at how an organization reviews—and uses reviews—to improve its performance.
Human Resource or workforce Focus	How does an organization engage, manage and develop the workforce to utilize its full potential in alignment with its overall mission, strategy and action plans? This criterion also examines the ability to assess workforce capability and capacity needs, as well as to build a workforce environment that is conducive to high performance.
Process Management	How does an organization determine its core competencies and work systems to deliver customer value and achieve organizational success and sustainability?

Partially taken from Foster, Johnson, Nelson & Batalden, (2007)

2.3 Internal Strength and Social Capital

Almost all contemporary researchers have an agreement that organizations' internal resources, tangible or intangible, are the major source to achieve competencies and competitive capabilities. Different authors and researchers

defined internal resources differently and studied only those resources which were the need of their research but none of them ever denied the importance of the impact of such resources on firms' capabilities. Dragnic (2014) considered firm size, life, technology, and autonomy as internal

resources while Aziz, Razak, Yaacob & Rahim (2015) studying logistics resources as a source of competitive advantage for LSPs divided internal resources in five major groups and named them as physical resources, management resources, technology resources, relational resources and organizational resources. Kersten and Koch (2010) while analyzing the effect of QMPs on service quality stated that service potential is LSP's ability to realize service through its tangible resources even though they are not directly used in providing service. Pearce and Robinson (2013) mentioned that assets are the major category of resources that include facilities, raw material, financial resources and information communication technology. Many other researchers like Ding (2011) and Poon and Tong (2012) while studying the impact of managerial quality on logistics competencies and performance of LSPs in china studied the moderating effect of various internal resources like business age, staff size, nature of ownership, quality and standard of assets owned, information communication sophistication, extent of automation and guanxi which is the Chinese term for social capital. According to Brian (2007) social capital are "those intangible assets [that] count for most in the daily lives of people: namely goodwill, fellowship, sympathy, and social intercourse among the individuals and families who make up a social unit" According to Putnam (2000), social capital is the "collective value of all social networks". Munizu (2010) discussing internal resources divided them into four aspects namely human resource, financial, technical and marketing while considered government policies, sociocultural strength as external links of internal sources. Baker (2000) thinks that like human and financial capitals, social capital is also equally important and productive. Social capital helps in getting things and jobs done easily, quickly and effectively creating value, and positively contributing towards business missions and goals. Bourdieu (as cited by Rezazadeh, Zehi & Rad, 2016), for the first time in 1980 introduced the concept of social capital as a bundle of apparent and latent incorporeal resources arising from firms' longstanding networking.

Yen and Abosag (2016), in their research at macro level, also proved the importance of relationships and connections, networks of influence, relationship longevity, personal trust and reciprocal favor exchanges on business-to-business integration. This review establishes the importance of internal assets, service potential and external links and their direct and moderating link on business performance but none of the researcher was found determining the moderating impact of such elements on the integration competency of 3PL Service Providers.

3. CONCEPTUAL FRAMEWORK

Having reviewed accessible literature on QMPs, BEMs, business performance, service capabilities and integration competency, it was noticed that regarding the impact of QMPs on the integration competency of LSPs, literature was almost silent and unable to answer the questions raised in this research. The impact of QMPs on the integration competency and the moderating effect of social capital and LSP company's internal tangible strength was a topic which could not get due share of attention from management researchers. Based on the knowledge gap noticed during the review of relevant literature, this research

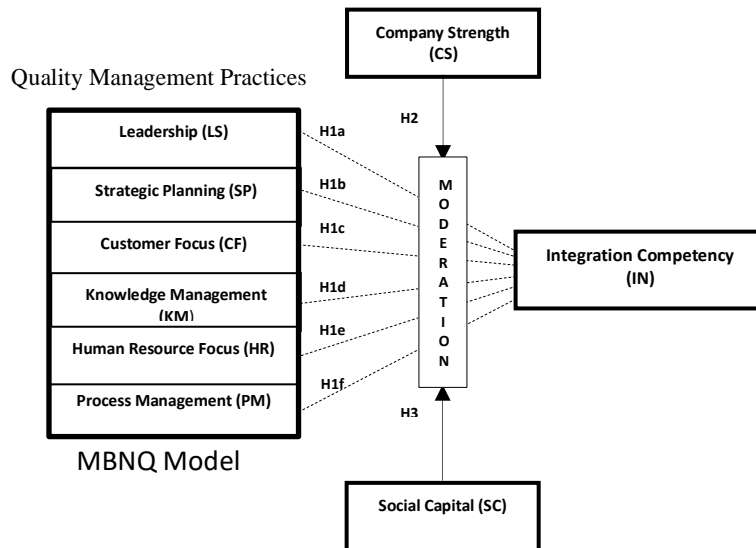
intended to study the impact of quality management practices on integration competency of 3PL Service Providers and to specifically identify which QMPs highly positively impact this very important competency. The 3PL industry, everywhere in the world, includes firms ranging from very small and new firms to huge and long-established international organizations owning sophisticated assets and bigger structure so it will not be justified to give equal weight to the opinion of all logistics service providing firms. Taking this inequality into account, this research also studied the moderating effect of firms' internal strength in terms of their tangible assets and business external links known as social capital.

3.1 Scales and Constructs

Unlike firms' internal tangible resource strength, the variables like quality management practices, integration competency and social capital variables being complex and multifaceted phenomena are impossible to be quantified and directly measured. These variables need to be measured through latent constructs which are easily measurable. To reach to suitable and viable conceptualization of research model to get answers for the questions raised above, help was taken from relevant literature reviewed and referred in section 2.

MBNQA by far is a widely used model for judging firms for the quality of management. This research used the six dimensions of MBNQA named *Leadership (LS)*, *Strategic Planning (SP)*, *Customer Focus (CF)*, *Measurement Analysis and Knowledge Management (KM)*, *Process Management (PM)* and *HR Focus (HR)* as Independent Variables (IV) to study their impact on *Integration Competency (IN)* which is the Dependent Variable (DV) in our research model.

As noticed during review of literature that almost all contemporary researchers accepted and agreed upon the important role of firms' tangible assets and their external or social links on their overall performance but still their link with firms' integration competency is not duly studied and discussed. This study tried to find out if there is any moderating role of tangible assets and social links, called here social capital, in enhancing the integration competency of LSPs which is supposed to ultimately improve their performance. For the purpose of assessing the moderating role of these elements, two Moderating Variables (MV) named *Company Strength (CS)* and *Social Capital (SC)* were included in this model. Company Strength included all those tangible assets which were mentioned in literature and are considered to be helpful in improving the integration competency like firm age and size, spatial coverage, span of services offered, operational equipment, facilities owned, use of ICT, extent of automation and operational networking. Social Capital as discussed by Yen and Abosag (2016), included the constructs like firms social networking, cultural diversity, links with vertical partners, links with support bodies, marketing aggression, inter-personal ties etc. In order to get answers to the research questions raised about the relationship and impact of QMPs on integration competency and to fill the gap identified during literature review, this research has formulated following hypotheses to be empirically tested through the sample drawn from the 3PL industry of Pakistan.



Independent Variables (IV) = Leadership (LS), Strategic Planning (SP), Customer Focus (CF), Knowledge Management (KM), HR Focus (HR), Process Management (PM). **Moderating Variables (MV)** = Company Strength (CS), Social Capital (SC)
Dependent Variable (DV) = Integration Competency (IN)

Figure 1 Research model

H₁: The six QMPs, identified as dimensions of MBNQA model, positively impact the integration competency of 3PL Service providers in Pakistan.

For the sake of avoiding ambiguity in explaining statistical results and to exactly analyze and find out the individual impact of each of the six QMPs, the first Hypothesis (H1) is further divided into six sub-hypotheses (H1a, H1b, H1c, H1d, H1e and H1f), one for each dimension as shown in research model.

- H_{1a}:** *Leadership* positively impacts the *Integration competency* of 3PL Service providers.
- H_{1b}:** *Strategic Planning* positively impacts the *Integration competency* of 3PL Service providers.
- H_{1c}:** *Customer Focus* positively impacts the *Integration competency* of 3PL Service providers.
- H_{1d}:** *Measurement Analysis and Knowledge Management* positively impacts the *Integration competency* of 3PL Service providers.
- H_{1e}:** *Human Resource Focus* positively impacts the *Integration competency* of 3PL Service providers.
- H_{1f}:** *Process Management* positively impacts the *Integration competency* of 3PL Service providers.

The Following two hypotheses are to empirically study the moderating effect of *Company Strength (CS)* and *Social Capital (SC)* on the impact of QMPs' on integration competency of LSPs.

- H₂:** Tangible assets as *Company Strength* play a positive moderating role in enhancing the impact of six QMPs, on integration competency of 3PL Service providers in Pakistan.
- H₃:** Firm's *Social Capital* plays a positive moderating role in enhancing the impact of six QMPs, on integration competency of 3PL Service providers in Pakistan.

4. METHOD

The population of this study is comprised of the members of The Pakistan International Freight Forwarders Association (PIFFA), which is the only nationally and internationally recognized association of 3PL Service Providers in Pakistan and is the local chapter of International Federation of Freight Forwarders Associations. There are few other national associations of 3PL operators in Pakistan but PIFFA, having a total membership of about 640 LSPs, is considered as the sole and authentic representative body of international freight logistics service providers.

A Structured questionnaire was used as a tool to collect data from LSPs. The questionnaire was comprised of two major sections. First section mainly consisted of questions about firm's demographic information and internal resources like business age, staff size, number of branch offices, assets owned, business experience of responding informants, information communication equipment, nature of services offered, extent of automation etc. The second section comprised of questions in the form of statements for respondents to rate their agreement or disagreement on a scale of 1 to 7 with one (1) denoting strong disagreement and seven (7) denoting strong agreement. This section had three subsections to measure the constructs for quality management practices, integration competency and social capital. To ensure the content validity, the statements were chosen from similar studies like Ding (2011) and Poon and Tong (2012) to scale and measure the independent and moderating variables. To ensure that content or questions/statements are easily understandable and fully reflect and represent the local business culture, the CEOs/owners of five well established 3PL businesses were requested to review the statements and the indicators for company strength. The questionnaires were emailed to the whole population (640 PIFFA members) requesting to get questionnaires filled in by senior informants in their organizations especially strategic or tactical level managers.

Initial response was not very encouraging so reminders were sent twice, follow up calls were made and ultimately after personal visits of support team of enumerators comprised of university students, only a total of 178 questionnaires were filled which is approximately 28% of total PIFFA membership. Out of these 178 questionnaires, 21 were rejected due to missing vital information and 157 responses were transferred to computers for analysis using Statistical Package for Social Sciences (SPSS).

For the quantitative analysis part of this research, initially required tests were run to check the internal consistency and reliability of data. As suggested by Coakes, Steed and Price (2008), internal consistency and reliability of data was confirmed through computation of Cronbach's Alpha coefficient for all scales in the model and an Alpha coefficient value of 0.70 or higher was considered good for established scale. Since all measures in the questionnaire were developed from already validated researched studies published in reputed research journals, and referred above, so according to Poon and Tong (2012) it can be assumed that the content and construct validity should be reasonably good. Hierarchical Multiple Regression (HMR) was run in three steps; initially between independent variable (six QMPs) and dependent variable (Integration Competency) and then in step two and step three the two moderating variables (Social Capital and Company Strength) were included in the analysis.

5. RESULTS

5.1 Demographic Statistics

Most of the respondents (65%) belonged to the strategic or tactical cadre of business management and the remaining (35%) though did not belong to the senior cadre but were directly involved with the management of company operations. 18 53% of responding firms were between the age of 10 to 30 years and 20% of the responding businesses were for more than 30 years in the business. More than 43% of the responding 3PL businesses had a permanent staff size between 10 to 50 persons while approximately 40% of the responding businesses had a permanent staff size of more than 50 persons. We found that about 90% of responding businesses had some sort of operational setup in the city of Karachi which seems very logical because it is the only port city having two ports in operation for all exports and import from and into Pakistan. About 30% of the responding 3PL firms did not have any branch offices in any city other than their head office location while 19% 3pl operators had one branch office and only 2% of responding firms have wider spatial coverage having 7 or 8 branch offices in different cities of Pakistan.

Almost all 3PL service providers do provide more than one services simultaneously but international freight forwarding (80%) and domestic transportation (66%) are the two most commonly provided services by 3PLs in Pakistan. Warehousing (59%) and Port clearance (56%), being the two complementary services of international trade and freight logistics come after that. Looking at the low percentage of firms offering freight bill audit and payment services, it is feared that probably the term was not properly understood by informants.

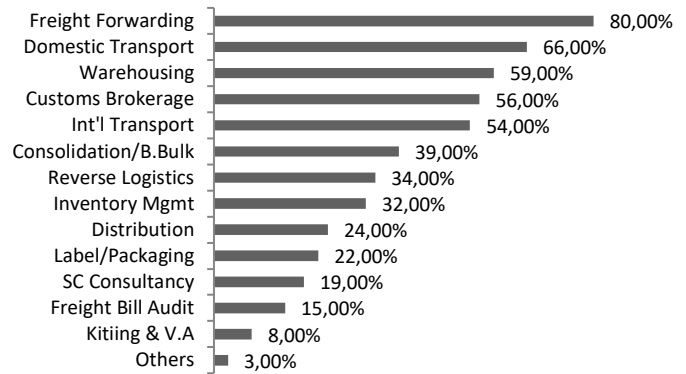


Figure 2 Logistics services offered

This survey also tried to determine the extent of computerization in 3PL business. Our survey reveals that freight forwarding operation (76%), Accounting and finance (71%) and HR function (69%) are three most computerized activities performed by 3PL firms in Pakistan. Track and trace and transportation both were found computerized in about 55% of the surveyed firms. The Customer Relationship Management (CRM) was found there only in 30% of the surveyed firms.

5.2 Hypotheses Testing

The result of Kaiser-Meyer-Olkin (KMO) and Bartlett's Test for QMP factors show a very good sampling adequacy. KMO test value is 0.934 and the significant value for Bartlett's Test of Sphericity with a p-value of 0.0001 which is less than the significant level of 0.05 and as a rule of thumb there is no identity matrix in the inter-correlation of variables. All Cronbach's Alpha coefficient values computed for QMP scales ranged between 0.82 and 0.91 which are much higher than the minimum requirement of 0.6 established by Nunnally (as cited by Poon & Tong, 2012). It also established that constructs related to QMPs were measured reliably and they fulfilled the condition for convergent and discriminant reliability. After confirming constructs validity and data reliability and ensuring that all basic assumptions are fulfilled, the regression analysis for testing hypotheses was run. In following paragraphs, the statistical results of all hypotheses are discussed.

5.2.1 Hypothesis H1

As first step of regression analysis all six predictors (*Leadership, Strategic Planning, Customer Focus, Measurement Analysis and Knowledge Management, HR Focus and Process Management*) were entered. This model was found statistically highly significant $F(6, 150) = 59.922$; $p < .000$ and explained 70.60% of variance in the Integration competency. Since Hypothesis H1 was divided in six sub hypotheses (*H1a, H1b, H1c, H1d, H1e and H1f*) one for each management dimension. Out of six quality management practices entered as independent variable or predictors, the three quality management practices *Strategic Planning* ($t = 3.841, \beta = 0.33, p < .000$), *HR Focus* ($t = 2.729, \beta = 0.241, p < .007$) and *Process Management* ($t = 2.715, \beta = 0.241, p < .007$) made a significant positive impact on the *Integration Competency* of 3PL service providers in Pakistan. It supported our Hypotheses H1b, H1e and H1f. No other predictor showed a significant positive contribution, rather

Measurement, Analysis and Knowledge Management exhibited a non-significant negative impact on *Integration competency*.

5.2.2 Hypothesis H2

In step 2 the moderating variable named *Social Capital* was added. With this inclusion the total variance explained by the model as a whole was 71.60% ($F(7, 149) = 53.705; p < .000$). The introduction of *social capital* explained an additional 1.10% of variance in *Integration competency* ($R^2 \text{ Change} = .011; F(1, 149) = 5.534; p < .020$). This statistics proves our *Hypothesis H2* and in this model too the same three predictors the *Strategic Planning, HR Focus and Process Management* were statistically significant recording a β value ($t = 3.909, \beta = .334, p < .000$), ($t = 2.089, \beta = .188, p < .038$) and ($t = 2.504, \beta = .220, p < .013$) respectively. The impact of *Measurement, Analysis and Knowledge Management* was still negative.

5.2.3 Hypothesis H3

In third step of the regression, with the inclusion of an additional moderating variable named *Company Strength*, the model explained a total variance of 73.80% ($F(8, 148) = 52.061; p < .000$) introducing an additional explanation of 2.20% in *Integration Competency* ($R^2 \text{ Change} = .022; F(1, 148) = 12.227; p < .001$). This statistics proves our *Hypothesis H3* but in this final adjusted model, out of three predictors which were initially highly significant, *Strategic, Planning* with a β value ($t = 4.304, \beta = .355, p < .000$) and *Process Management* with a β value of ($t = 2.72, \beta = .23, p < .007$) showed a little improvement in their contribution supporting our *Hypothesis H3*.

Table 3 shows detailed statistical results of all six quality management factors and the effect of the two moderating variables; social capital and company strength.

Table 3 Hierarchical regression statistics

INTEGRATION COMPETENCY								
INDEPENDENT VARIABLES	R	R ²	ΔR ²	B	SE	β	t	Sig
STEP 1 for H1	0.840 ^a	0.706	0.706	-	-	-	-	-
Leadership (LS)				0.045	0.056	0.056	0.811	0.419
Strategic Planning (SP)				0.326	0.085	0.333	3.841	0.000
Customer Focus (CF)				0.138	0.075	0.131	1.840	0.068
Knowledge Mgmt. (KM)				-0.082	0.062	-0.088	-1.321	0.189
H.R. Focus (HR)				0.176	0.064	0.241	2.729	0.007
Process Management (PM)				0.215	0.079	0.241	2.715	0.007
STEP 2 for H2	.846 ^b	0.716	0.011	-	-	-	-	-
Leadership (LS)				0.052	0.055	0.064	0.942	0.348
Strategic Planning (SP)				0.327	0.084	0.334	3.909	0.000
Customer Focus (CF)				0.084	0.078	0.080	1.085	0.280
Knowledge Mgmt. (KM)				-0.063	0.061	-0.068	-1.029	0.305
H.R. Focus (HR)				0.137	0.065	0.188	2.089	0.038
Process Management (PM)				0.196	0.078	0.220	2.504	0.013
Social Capital (SC)				0.103	0.044	0.140	2.352	0.020
STEP 3 for H3	.859 ^c	0.738	0.022					
Leadership (LS)				0.030	0.054	0.036	0.554	0.581
Strategic Planning (SP)				0.348	0.081	0.355	4.304	0.000
Customer Focus (CF)				0.120	0.076	0.113	1.585	0.115
Knowledge Mgmt. (KM)				-0.091	0.060	-0.097	-1.521	0.130
H.R. Focus (HR)				0.101	0.064	0.139	1.581	0.116
Process Management (PM)				0.205	0.076	0.231	2.719	0.007
Social Capital (SC)				0.083	0.043	0.113	1.949	0.053
Company Strength (CS)				0.118	0.034	0.161	3.497	0.001

a. Dependent Variable: *Integration Competency*

b. Predictors: (Constant), *Leadership, Strategic Planning, Customer Focus, Knowledge Management, HR Focus, Process Management*.

c. Predictors: (Constant), *Leadership, Strategic Planning, Customer Focus, Knowledge Management, HR Focus, Process Management, Social Capital*

d. Predictors: (Constant), *Leadership, Strategic Planning, Customer Focus, Knowledge Management, HR Focus, Process Management, Social Capital, Company Size*

6. DISCUSSION

Cohen (as cited by Poon and Tong, 2012) stated that if the value of Adjusted R^2 is higher than 25% then relationship is considered as strong while this research showed that all quality management factors collectively very significantly explained 70.60% of variance in the integration competency. This relationship became further stronger with the inclusion of social capital and company strength as moderating variables.

In our study the strategic planning, human resource and process management emerged as significant constructs influencing integration competency of LSPs. If we look at the definition of strategic planning presented by Babafemi (2015) in his article where the researcher mentioned that strategic planning is the most important tool of any organization to achieve the best out of existing situation and to find out the best future path for any organization. For sure strategic plan cannot be formulated and implemented without proper focus on human resources and without strong process management within organization. Bagheri (2016) also supported the important role of human resource in strategic planning and said that one of the resources which is strategic for organizations is human resources and is the important component for strategic planning. Employees with the right skills, talent, and knowledge have a great impact on business process improvement, and Lieb and Bentz (2005) observed that 3PLs' success was related to the logistics talents. The results of this research supported the statements and findings of studies referred above. The importance of process management is also supported by another earlier study carried out by Bowersox and Closs (1997). In a study Cauchick Miguel (2001) analyzing world class logistics performance of Brazilian Logistics emphasized that all businesses have various core processes which they need to manage and integrate with their own core competency and as a strategy, proper processes are managed by competent human resource. The 3PL logistics service providers are therefore recommended to provide more training to improve the working attitude of their staff.

In this research unexpectedly the customer focus did not show any significant impact on integration competency although other researchers like Panayides and So (2005) and Zhang, and Okoroafo (2015) emphasizing the importance of service competencies concluded that integration capability with reference to customer focus is very important to share and receive information to be able to improve the level of services provided to customers. Specially role of Customer Focus in customer integration process is established and emphasized in various studies. Sabella, Kashou and Omran (2014) stated that the intensity of Customer Focus is the degree of attention on how particular and focused the business is in fulfilling customers expressed and implied demands, perceptions and expectations and how much the organization cares about the relationship with customer, indicates the degree of customer focus which in turn helps in cementing the integration with customers. Similarly, leadership is considered as a guiding capability to improve integration with customers but here the reason of this variable to be statistically insignificant might be the quality instead of incapability of leadership to influence their impact on service chain integration. In this study, another important variable known as measurement analysis, and knowledge

management did not emerge as a significant construct impacting integration competency. Lyu, Zhou and Zhang (2016) in their study found an interconnection between managers (leadership) and the knowledge management saying that knowledge performance allows managers to understand the deficiencies in their management practices. In our research we also observed that the two variables also exhibited similar behavior. While analyzing the impact of quality management dimensions of MBNQA model on process performance, Poon and Tong (2012) also found similar results and this construct did not show a positive impact on the process performance of private 3PL service providers in Southern China.

As mentioned above social capital when included in the model to study its moderating effect, as expected it showed a significantly positive overall effect in relation to integration competency and it also slightly improved the individual direct impact of strategic planning but did not positively help the impact of other predictors. The impact of leadership was still insignificant on integration competency while measurement analysis and knowledge management still showed a negative and insignificant direct impact. Company strength along with social capital further slightly improved the direct contribution of strategic planning. There was no change in the behavior of other factors, and it remained almost same as it was without these two moderating factor. Thus, it can be concluded that social capital and company strength in their individual capacity made the collective relationship stronger and helped to further explain the variance, but they did not significantly impact the individual contribution of other quality management factors. So, on the basis of this research we can say that social capital and company strength do help in enhancing the integration competency of 3PL service providers but do not help quality management factors to improve their individual impact on these competencies.

7. CONCLUSION

The results of this study along with several managerial implications, provide some valuable suggestions to logistics professionals in Pakistan, as to which quality management practices are highly effective in enhancing integration competency of LSPs in Pakistan. As far as the individual impact of various quality management factors is concerned, strategic planning, HR focus and process management showed a very significant relationship with integrating competency. Surprisingly, the impact of Leadership, Customer Focus and Knowledge management was not significant but QMPs which showed an insignificant impact cannot be ignored for their importance. Leadership is considered as a guiding capability to improve integration with customers but here the reason of this variable to be statistically insignificant might be the incapability of leadership to influence its impact on service chain integration. This researcher instead of ignoring this factor firmly believes that the skill of managers or quality of leadership cannot be ignored on the basis of this empirical result rather LSPs must concentrate to enhance these skills to be effective for better integration. In this study, another important variable known as measurement analysis, and knowledge management did not emerge as a significant construct impacting integration competency. This might be

due to the ignorance of the importance of knowledge management in LSP industry which is hoped to improve as industry matures. Another important conclusion drawn through this study is that social capital and company strength are not helpful, in isolation, but they work as catalysts to improve competency with better quality of management practices. This cross-sectional study is a static snapshot of the occurrence and It is hoped that a mixed design longitudinal study using multiple informant sources probably could be more helpful.

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