Improving cycle time performance: the role of market turbulence and cultural competitiveness

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Supply chains are getting increasing substance but the antecedents of their failure and success are not clearly identified till yet. The main aim of this study is to examine the influence of Cultural Competitiveness (CC), Market Turbulence (MT), and Knowledge Development (KD) on the performance of cycle time. The conceptual framework is proposed based upon extensive literature review. For this study, data was collected from 91 respondent manufacturing organizations. Upon assuring the reliability and validity of the constructs, correlation and hierarchical regression were used to test the hypotheses. Findings reveal that CC and MT have positive impact on cycle time. KD has insignificant association with performance of cycle time. No joint relationship of CC and KD, MT and CC, and MT and KD was found affecting the performance of cycle time. Practically, it is difficult to achieve dramatic reorientation of supply chains, and it is less likely that the failure of the two elements (CC and MT) can be quickly remedied. Our results indicate that such businesses can benefit from building CC – with the focus on MT – it will ensure that the company has at least some of the advantages of reducing cycle time.

**Keywords:** market turbulence; culture of competitiveness; resource-based view; hierarchical regression

Introduction

Finding the firm’s performance determinants has long been the primary focus of strategic management. In fact, getting knowledge of why few firms perform extraordinarily than the others is the area top scholars of this field emphasize on (e.g. Hitt, Boyd, & Li, 2004; Summer et al., 1990). In last few years, the nature of competition has increasingly transferred to ‘supply chain vs. supply chain’ efforts (Handfield & Nichols, 2002; Slone, 2004). Supply chain is an integrated approach that focuses on managing (Cooper & Ellram, 1990) and connecting the partially discrete value adding, yet interdependent and through the structure of network, similar or chronological, units collectively transferred raw material into final products (Bowersox, Closs, & Stank, 1999). In this modern and unstable era of business, firms have realized the increasing importance of supply chains. Today, firms are well aware of the fact that they cannot compete individually in dynamic competitive environment unless they establish inter and intra supply chain strategic alliances (Tukamuhabwa, Eyaa, & Derek, 2011). Clash

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of UPS and FedEx are evident as they occurred not only due to individual abilities, but relatively joint abilities of their relevant supply chains that find out output. In past, not much attention had been paid on experimental studies in supply chain management on the grounds of strategic management in contrast to related field, i.e. operations management and marketing that had focused on the performance of functional actions. For instance, according to the literature of operations management, Anderson, Cleveland, and Schroeder (1989) stated that appropriate strategic arrangement of operations competencies considerably affect performance of business and competitive strength of an organization. In recent years, for examining the 'strategic supply chain management' research of strategic management has started by a small body – supply chain is not only to get things where they require, rather it is also a mean to increase key results (e.g. Hult, Ketchen, & Slater, 2004). Strategic management of supply chain’s importance is clear that how organizations, i.e. Toyota, Wal-Mart, Dell, and Zara had achieved competitive advantages on their competitors and used their supply chains as a weapon for getting competitive edge on their peers. It means that the failure of strategically managing of supply chain explores unfavorable results. Lee (2004), for instance, explains that due to the problems of supply chain, Cisco in 2001 had to write off $2.25 billion from inventory, and Motorola in 2003 also faced deficiency in the sales of early camera phones. Results provided, main problem of supply chain destroys 10% of an average market value of firm (Hendricks & Singhal, 2003).

Since inability of organizations to fulfill customers’ demand on said time lead them to suffer from cut in profits. The firms failed to assure their supply chains agile, thus confronting a situation where they could neither establish a sustainable competitive advantage over their competitors. Thus, as advocated by Hult, Ketchen, and Arrfelt (2007) and from a discussion above, the crucial role of ‘time’ in success or failure of firms’ supply chain cannot be denied. Following Hult, Ketchen, and Nichols (2002, 2004, 2007), we emphasize on cycle time of order fulfillment – the time period spent after receiving the order from customer to deliver the required product to customer. Cycle time is the key element to directly assess the functioning of supply chain (Nichols, Retzlaff-Roberts, & Frolick, 1996) and more significantly it is central to strategic success of firm. Handfield and Nichols (2002) advocated that at the firm level, not mere direct connection of cycle time with profit, but through cycle time excellence, growth of firms becomes fast and brings about high increases in profits as compared to the competitors. Costs of inventory and overhead controlled market share increases because of new products introduced early, and move to the leadership position in industry. In comparison to studies of Hult et al. (2002, 2004, 2007), we focus to examine multiple firms. In particular, focusing on subjective approach of CTP, this will help us for knowing the reason to outclass performance of some firms relative to others.

This paper is for future view of emerging concept of supply chain in strategic supply chain management. We wrote on Hult et al. (2002), who explored the view of ‘cultural competitiveness (CC)’ as an indication of learning orientations, innovativeness, and entrepreneurial. Hult et al. (2004) described, process of knowledge development (KD), both variables are for achieving matchless performance. In both studies, the key element is learning but the difference is in tested frameworks. As our point of innovativeness and the perspective of preceding studies for learning, we focus on the view of resource-based (Wernerfelt, 1984) organizational learning theory (Huber, 1991) and processing of information (Daft & Weick, 1984). We focused on the development of a framework comprising CC, Market Turbulence (MT), and KD, as well as testing it
if these antecedent factors contribute and play any role in defining the cycle time performance of a firm.

Since the competition in today’s economy is less between firms but more between SCs, there is ever increasing need to focus on strategic supply chain management to answer that why few firms are performing extraordinary while others are not. Following this emerging discipline, this study addresses SCs from the aspects of CC, KD, MT, and CTP. As CTP has direct roots with firm’s growth and profitability, therefore, minimizing lapses in CTP through determining and managing its drivers might help a firm to cultivate some of the benefits, if not all, of its SC. In particular, this study aims to find the effect (if any) of CC, KD, and MT on CTP, and why and how these could be valuable in determining CTP.

Theoretical framework

Studies by Schroeder, Bates, and Juntila (2002) and Ray, Barney, and Muhanna (2004) explored the importance of analyzing resources within which an organization carries the processes of operations management. Figure 1 describes the conceptual framework, which gives explanation of cycle time in supply chain. The framework consists of two factors of higher order – KD and CC – these have further seven dimensions. CC explains the extent to which anticipated chains find the gaps between market demands and currently offered products and fill it (Hult et al., 2002). Representation on the resource-based view (Wernerfelt, 1984), CC is conceptualized as an intangible hidden element (Godfrey & Hill, 1995) which is revealed in three different orientations – learning (LO), innovativeness (IO), and entrepreneurial (EO) – which increases the likelihood of firm performance. The learning orientation is a critical factor that assists the association of KD and CC (Hult et al., 2007). Particularly, learning orientation emphasizes on the beliefs and values that lead supply chains’ actions necessary for the development of knowledge. In contrast, KD is a concept in which actions direct towards achieved memory (AM), information distribution (ID), shared meaning (SM), and knowledge acquisition (KA) in supply chain (cf. Huber, 1991). As such, learning orientation is resound in the values of knowledge seeking (Baker & Sinkula, 1999) though
KD is revealed through the behaviors of producing the knowledge. Study on the organizational learning (e.g. Huber, 1991) and information processing (Daft & Weick, 1984) provides four basic fundamental factors of KD – achieved memory, information distribution, shared meaning, and knowledge acquisition – and in supply chains, its higher order association with performance. Wide literature of learning is the foundation of interaction of KD and CC in framework (e.g. Argyris & Schon, 1978).

**Supply chains CC**

The prolonged conceptual development of view of the resource-based needs researchers to not generally associate total sum of resources calculations on the level of firm, but rather shift inquiry to analysis ‘where resources reside’ (Barney & Mackey, 2005). Therefore, attention of empirical and theory should be planned and it should be at organizational level and not at the resource level; an analysis level where the resources and prominent level of role reside, offered by supply chain. In fact, Hult et al. (2002) studied for the reason why members of a chain do not distribute the whole as it is important for supply chain results to develop the specific resources through the general association of organization. According to Weick (1987), the resources of shared supply chain can be an alternative for conventional characteristics that tie the firm’s members, i.e. strategy, structure, and culture. Constructing on the resource-based view, Hult et al. (2002) advocated that through the cooperation and interaction of members of supply chain, the role of CC becomes an invisible strategic resource. A model of shared beliefs and values provides the members of supply chain by CC and impels the approach of chain to the place of market that declares the significance of specific aspects. In isolation, CC is emphasized on the three orientations of culture – learning, entrepreneurial, and innovativeness – that strategically guides the chains of supply to overcome the gap between future requirements of customers and currently offered things. To renew the current areas and activities of supply chain, and also to chase the new opportunities in market, is defined as entrepreneurial orientation (e.g. Naman & Slevin, 1993). Linked values of members of supply chain with creation and producing new ideas are defined as an innovativeness orientation (i.e. associates free to innovative thoughts (Hurley & Hult, 1998). Whereas, learning orientation is defined as linked values of members with the creation of latest insights which are latent to the formation of activities of supply chain (cf. Huber, 1991). For LO (scale comprising of four items) developed by Hult (1998) was used. For IO (scale consisting of five items) Hurley and Hult’s (1998) scale, Naman and Slevin’s (1993) six items scale for EO. For the appearance of invisible strategic resources and higher CC, all the three orientations are compulsory and ‘separately not enough’. CC emerges unusual, precious, and matchless strategic resource in chains of supply (Barney, 1986; Wernerfelt, 1984) which can give prolonged competitive benefit and increased performance (Hult et al., 2002). On the basis of arguments above, we assume that:

H1: There is a positive relationship of CC with the performance of cycle time.

**KD in supply chain**

KD is a concept in which actions direct towards achieved memory, information distribution, shared meaning, and knowledge acquisition in supply chain (cf. Huber, 1991). There are four dimensions that supreme to the efforts of learning by describing
these dimensions Hult et al. (2004) developed ‘KD’ model. Knowledge acquisition is a first dimension – A process in which entities, i.e. supply chains and organizations get liberty. Shared information is a second dimension – process of distributing the information from different sources. In the supply chains consisting of different members and nodes, distribution of information occurs all over the chain (Kohli, Jaworski, & Kumar, 1993). Shared meaning or interpretation of information is the third dimension – a process in which members develop general understandings about the events and data (Corner, Kinicki, & Keats, 1994). Due to poor culture in specific supply chain, events and data are required to combine the collective action (Hult et al., 2004). KD may be very essential element of ‘organizational memory’ (Huber, 1991), tagged ‘achieved memory’ is the fourth dimension of KD. Totality of experiences, knowledge, and know-how with the processes of supply chain, its behaviors, and operations is memory. It provides a system in which knowledge is saved for future strategic utilization, and is also critical for the behavior of future learning. According to the literature, organizational information processing theory which grants the basis of expectation of these four dimensions should increase the performance of supply chain. As mentioned above, this theory states that the fundamental work of organized collectivities (supply chains (Bowersox et al., 1999) is collecting, interpreting, and processing of information (Daft & Weick, 1984). Literature on ‘strategic sense making’ broadens this to describe those activities of information processing that strongly form strategic decisions which are taken within organizations and consequential results (Thomas, Clark, & Gioia, 1993). The knowledge-based view of firm (Grant, 1996) also holds up the development of knowledge–performance connection. Along with resource-based view, knowledge-based view provides a foundation to generate and develop liberty and build competitive benefits and thereby increases outcomes (e.g. Hult et al., 2004). In isolation, within the context of supply chain, our argument is:

H2: There is a positive relationship of KD with the performance of cycle time.

Synergy between CC and KD: A wider literature of learning (e.g. Argyris & Schon, 1978; Nystrom & Starbuck, 1984) provides the conceptual basis for the study being amalgamation of KD and CC in the chains of supply, whereas Hult et al. (2002, 2004) constructed the model for both KD and CC within the supply chains, and did not amalgamate the both conceptual models. This is unluckily because learning orientation developed within the framework of CC emphasized on the values of knowledge-seeking supply chains (Baker & Sinkula, 1999) which lead learning orientation behavior of producing the knowledge within the model of KD (e.g. Grant, 1996; Huber, 1991). In isolation, both frameworks (KD & CC frameworks) overlooked the association between KD and CC that how do they jointly affect the performance of cycle time in supply chain. In other way, according to their learning of shared concern, KD and CC both are not enough to enhance the performance. As an alternative, they support and complement each one for a powerful strategic impact.

For instance, Baker and Sinkula (1999) suggested that through increasing the orientation of learning by members of supply chain, organizations not only collect and spread the information concerning the markets, but also continuously analyze the storage purposes and check the validity of strong arguments that direct the whole process. Simultaneously, in supply chain, the stressing behavior of producing knowledge is probably directed to ‘Culture of Competitiveness’ in the orientation of learning by inherent values infrastructure (e.g. Slater & Narver, 1995). Be relevant within the chains of
supply, hope of synergistic association between KD and CC is reliable with Day’s (1994) outside-in and inside-out procedures that centers on the strategic association among the better in management of process, learning diffusion, and knowledge integration. That is why we can assume that:

H3: There is joint positive relationship of Knowledge Development and Cultural Competitiveness with the performance of cycle time.

The moderating role of MT

Based on the literature, we operationalize and focus on moderating role of MT varying rate of composition and priorities of customers (Jaworski and Kohli, 1993). In this study, one critical environmental factor (i.e. MT) that conceptually has an impact on the affiliation has been studied (e.g. Dess & Beard, 1984). Additionally, we put specific focus on the idea that management observations, specifically concerning the decision-making, form strategic option and uncertainty of market (Child, 1972). In the same way, Sharfman and Dean (1991) described that environment of an organization consists of external flow of information that is established by law through beliefs and attention. A valid addition is that beliefs and perceptions of environment form behaviors and cultures (Dutton & Jackson, 1987).

We hope that this argument will also explain the reality about supply chains. For instance, according to the one behavioral theory’s doctrine, memory of organization depends on circumstances in which an organization works (Cyert & James, 1992). Thomson (1967) proposed that facing the uncertainty is ‘essence of the administrative process.’ Consequently, supply chains possibly realize that there is a positive impact of MT on KD–cycle time performance providing forceful nature of KD behaviors. In fact, by applying the idea of essential diversity, Ashby (1956) proposes that as the rate of environmental change increases, the KD also increases. Essential diversity means that organizational bodies, i.e. chains of supply, must fit the complexities of environment with their activities and strategies. Supply chain is an expert at expansion of knowledge possession and the liberty of large storage of data for removing the complexities generated due to fast changes. Hence:

H4: Market turbulence positively influences the cycle time performance.

H5: There is a positive influence of market turbulence on the association of Knowledge Development with the cycle time performance.

The theory of structural contingency proposes that resource value depends upon the situation in which it is organized (Lawrence & Lorsch, 1967). Focusing on this common principle, we hope turbulence of market to contain the CC–cycle time performance connection. Weiss and Heide (1993) pointed out that rapid marketplace changes can be detrimental for previously established competencies of culture which is strongly embedded and ingrained in the beliefs and value systems of members of supply chain. Like above discussion, CC reveals supply chains influence to tactically overcome the gap between current offerings of market and current desires of market (Hult et al., 2002). When MT is at lower level, the gaps are comparatively persistent and slow developing proposing that CC can be used effectively in filling these gaps. Similarly, when
turbulence is at higher level, the gaps are likely to develop faster and inconsistent leading the gaps that CC aims to fill to be imprecise. Thus:

H6: There is a negative impact of market turbulence on the association of between the cycle time performance and CC.

Methods

Data collection

For assessing the quality of research plan, we carried out pilot study with 36 executives of supply management. On the basis of this step, few changes were made in the instrument along with special directions of the respondents to keep their participation secret. We distributed 200 questionnaires to SC professionals in personal and as well as by post, one questionnaire for each organization. Out of 200, only 91 (45.5%) respondents sent back the questionnaires that were complete from all aspects and were usable for further analysis. The data represents 95% confidence level at 7.57 confidence interval, thus enhancing sample precision. However, when taking confidence level of 99%, the confidence interval we get is 9.97. Since the data were collected from randomly selected firms, we can conclude that if data are collected from whole population, we are 95% assured about getting the same response that was obtained from certain proportion of prior sample, with ± 7.57 variation in the range/size.

Overall, 11 (out of 18) firms were from pharmaceutical, 27 (out of 58) from textile, 12 (out of 39) from leather, 23 (out of 51) from chemical, and 18 (out of 34) firms were from FMCG sector. We selected the SC professionals only from Pakistan having their designations such as purchasing director, procurement vice president, materials management and purchasing director, and officer of chief purchasing by drawing their list from company’s data and assuring that they had complete knowledge of SC and information about their organization’s vision, mission, and goals and objectives. We directed the respondents to emphasize on the process of fulfillment of last order in their supply chains while filling the questionnaire and we remained limited to manufacturing organizations. We used convenience sampling because the personnel of Pakistani organizations do not have deep knowledge about supply chain management, which is why we targeted top-level SC executives and professionals. Associations of these persons in their organizations were an average of seven years and they were representing those organizations which were established 20 and/or more than 20 years ago.

Measures

To measure the research variables, we used pre-developed, pre-tested, and validated scales. For LO (scale comprising of four items) developed by Hult (1998) was used. For IO (scale consisting of five items) Hurley and Hult’s (1998) scale, Naman and Slevin’s (1993) six items scale for EO, Kohli et al.’s (1993) six items scale for KA, Kohli et al.’s (1993) five items scale for ID, Hult et al.’s (2004) four items scale for SM, Moorman and Miner’s (1997) four items scale for AM, Jaworski and Kohli’s (1993) five items scale for MT, and Hult et al. (2002) and Hult et al.’s (2004) six items scale for CT.

All the dimensions of constructs were explored using EFA assuring the factor loading $\geq .04$ (Boone, Ponton, Gorsuch, González, & Miller, 1998). In order to test the
reliability, Cronbach’s Alpha was used that provided the values .60 for LO, .74 for IO, .70 for EO, .75 for KA, .83 for ID, .74 for SM, .65 for AM, .87 for MT, and .68 for CTP. Finally, using Amos, construct validity was tested in single model.

Results are presented in Table 1 of the assessment of measurement. Sources and their scales are listed in Appendix 1. Appraisal of dimensionality, validity, and reliability were the focus of conceptual measures. Moreover, for giving the experimental support, we analyzed the structure of KD and CC, furthermore at the collective level of higher order for emphasizing on these builds to the conceptual foundation. Initially, after performing EFA, one item was dropped from LO construct not meeting the desired level of factor loading. After that when checking construct validity, six items were excluded having their loadings below .5. The goodness of model fit was tested by a number of indices suggested by Jöreskog and Sörbom (1993) and Kline (2010). These indices include chi-square divided by degree of freedom (CMIN/DF), RFI, NFI, CFI, RMR, and RMSEA. An excellent model fit was achieved as Chi-square = 940.03, DF = 587, CMIN/DF = 1.601, RMR = .07, GFI = .93, CFI = .97, NFI = .87, and RMSEA = .06.

Given the conceptual and theoretical arguments for CC and KD, we also conducted a higher order assessment for them after purifying all the items in first-order and second-order indicators. In addition to the results provided in Table 1, the results generated by higher order CC and KD assessment also support each construct’s higher order structure. As LO (loading = .76, t = 7.87, p < .01), IO (loading = .82, t = 8.01, p < .01), and EO (loading = .71, t = 7.76, p < .01) play a role as first-order indicators for higher order CC (R2 ranges from .51–.67) constructs (first-order indicators composed of reflective indicators), similarly, KA (loading = .87, t = 6.12, p < .01), ID (loading = .64, t = 5.92, p < .01), SM (loading = .59, t = 5.13, p < .01), and AM (loading = .58, t = 5.07, Table 1. Construct internal consistency, reliability, and validity.

| Constructs                  | Ranges of constructs | Cronbach’s alpha |
|-----------------------------|----------------------|------------------|
| Learning orientation (LO)   | .681–.718            | .518–.723        | .60              |
| Innovativeness orientation (IO) | .613–.779            | .542–.706        | .74              |
| Entrepreneurial orientation (EO) | .606–.736            | .533–.681        | .70              |
| Knowledge acquisition (KA)  | .433–.742            | .576–.648        | .75              |
| Information distribution (ID) | .656–.880            | .57–.866         | .83              |
| Shared meaning (SM)         | .714–.784            | .600–.676        | .74              |
| Achieved memory (AM)        | .644–.801            | .611–.637        | .67              |
| Market turbulence (MT)      | .731–.854            | .658–.845        | .87              |
| Cycle time performance (CTP) | .442–.749            | .584–.715        | .68              |

Model fit stats for CFA

| Model fit stats for CFA   |         |
|---------------------------|---------|
| Chi-square                | 940.03  |
| DF                        | 587     |
| CMIN/DF                   | 1.601   |
| RMR                       | .07     |
| GFI                       | .93     |
| CFI                       | .97     |
| NFI                       | .87     |
| RMSEA                     | .06     |
Data analysis

For testing the relationships among learning orientations, innovativeness orientations, entrepreneurial orientations, knowledge acquisition, information distribution, shared meaning, and achieved memory, MT and cycle time performance Pearson’s correlation was used. After testing the correlation, we used hierarchical regression to test the hypothesized relationship between dependent and independent variables. For the purpose, we took average values of the dimensions of CC and KD in order to run regression analysis. Table 2 presents means, standard deviations, and Pearson’s coefficient of correlation. The results show that there is a significant and strong positive relationship among all the variables.

Testing of hypothesis was completed through hierarchical regression. Nevertheless, before testing the hypotheses, tolerance (TOL) and variance inflation factor (VIF) values were calculated to confirm that results are not accompanied by multicollinearity. VIF values ranged from 1.84 to 6.30. On the other hand, tolerance values ranged from .159 to .541. Given that tolerance values nearby 0 and VIF values greater than 10 are supposed to be problematic (Hair Jr, Anderson, Tatham, & Black, 1995), the results suggest that multicollinearity is not of concern in this sample. Results are summarized in Table 3. Hierarchical regression permits the direct appraisal of modification in descriptive strength within iterative steps (that we cannot achieve exactly using SEM provided, for instance, that equation of step 1 is soaked). Moreover, as a conventional method for our forecasting, it gives baseline position of outcome.

For the reason that there are three terms of interaction comprised in equation for decreasing the possible influence of multicollinearity, all variables were standardized (Cohen, Cohen, West, & Aiken, 2003). We inserted the variables of major influences in step 1 (MT, KD, and CC), and in step 2, moderators and interaction. Particularly, subsequent equation of regression in two steps of hierarchical was examined. Reliable with literature and the same time testing of major influence together with interactions, we

Table 2. Mean standard deviation and correlation.

| Cultural competitiveness | Mean | SD  | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    |
|--------------------------|------|-----|------|------|------|------|------|------|------|------|
| 1. LO                    | 3.82 | .484|      |      |      |      |      |      |      |      |
| 2. IO                    | 3.62 | .677|      |      |      |      |      | .681 |      |      |
| 3. EO                    | 3.73 | .598|      |      |      |      |      |      | .500 | .542 |
| Knowledge development    |      |     |      |      |      |      |      |      |      |      |
| 4. KA                    | 3.54 | .697| .465 |      |      |      |      |      |      |      |
| 5. ID                    | 3.71 | .698| .591 | .610 |      |      |      |      | .449 | .456 |
| 6. SM                    | 3.66 | .717| .415 | .380 | .484 |      |      |      |      | .434 |
| 7. AM                    | 3.75 | .595| .393 | .419 | .523 | .573 |      |      | .401 | .584 |
| 8. MT                    | 3.51 | .917| .314 | .649 | .527 | .727 | .481 |      |      | .453 |
| 9. CTP                   | 3.61 | .564| .478 | .601 | .541 | .597 | .413 | .380 |      | .391 |

*p<.05, **p<.01, N=91.
analyzed every major influence (CC→CT and KD→CT) like the influence of provided predictors.

The results illustrate that Model 1 is significant \((F=30.90; p<.01)\) with an \(R^2\) of .718 and .516, respectively. Results suggest that CC \((B=.415, b=.471, t=3.497, p<.01)\) and MT \((B=.405, b=.249, t=3.99, p<.01)\) have a positive impact on performance of cycle time. The data did not support the impact of KD \((B=-.021, b=-.023, t=-.171, p>.05)\) on CTP, rejecting H2. To test the incremental influence, Model 2 holds all the variables. Results indicate that Model 2 is also significant \((F=15.64; p<.01)\) with an \(R^2\) of .528. By including interactions into the analysis, the \(R^2\)-change from Model 1 to Model 2 is .013, which is significant \((\Delta F=15.43; p<.01)\).

Results in model 2 suggest that CC \((B=.437, b=.495, t=3.474, p<.01)\) and MT \((B=.419, b=.258, t=3.627, p<.01)\), again, have positive impact on performance of cycle time. The hypothesis 3 proposing joint effect of CC and KD is rejected \((B=-.136, b=-.153, t=-.834, p>.05)\), and suggest that CC and KD has a small negative impact on CTP which is statistically insignificant. Similarly, the moderating effects of MT for CC and KD are also not found, rejecting H5 and H6. Although, MT moderates the effect of CC on CTP \((B=-.119, b=-.55)\) in negative direction (as proposed in H6), the results are insignificant \((t=-.632, p>.05)\).

**Discussions**

Competition has become crucial nowadays. Today, the competition is not only between organizations to organization, but also between one supply chain and the other supply chain. Due to this competition, every organization wants to save cost because of the want to earn higher profits and to serve customers in such a way that they become loyal. Price and quality conscious customers require responsiveness and efficiency which are directly related to the cycle time. Recent emerging organizations using the resource-based view and organizational learning theory have reduced the cycle time as a sustainable competitive edge and captured the customers, which is crucial situation for small firms. The present study is one of infant efforts to explore supply chain strategic areas that can help in bringing responsiveness, but not at the cost of supply chain

### Table 3. Hierarchical regression results.

| Model          | \(B\)  | \(b\)  | \(t\)  | VIF | TOL |
|----------------|-------|-------|-------|-----|-----|
| Model 1        |       |       |       |     |     |
| Cultural Competitiveness | .415** | .471** | 3.497 | 2.534 | .395 |
| Knowledge Development | -.021 | -.023 | -.171 | 2.818 | .355 |
| Market Turbulence | .405** | .249** | 3.990 | 1.849 | .541 |
| \(R^2 = .718, F = 30.90\)** |
| Model 2        |       |       |       |     |     |
| Culture of Competitiveness | .437** | .495** | 3.474 | 2.813 | .355 |
| Knowledge Development | .008  | .008  | .062  | 2.922 | .342 |
| Market Turbulence | .419** | .258** | 3.627 | 2.376 | .421 |
| CC*KD          | -.136 | -.053 | -.834 | 4.984 | .201 |
| MT*CC          | -.119 | -.055 | -.632 | 6.308 | .159 |
| MT*KD          | .200  | .091  | 1.214 | 4.842 | .207 |
| \(R^2 = .726, F = 15.64\)** |

\(p<.05, \ **p<.01, B=\text{Standardized beta coefficients, } b=\text{Unstandardized coefficients.}\)
efficiency. Our two hypotheses are accepted which have significant relationships with the performance of cycle time (i.e. CC and MT) and remaining hypothesis are rejected in terms of those that have no significant relationship with performance of cycle time. While inferences drawn in this study are based on a representative sample from Pakistan, two of hypotheses are consistent with the theory and validate it empirically. These findings offer implications for SC professionals not only from South Asian region, but also from all around the globe, especially for those who are interested in boosting-up supply chains but are poor. Such SC professionals might bring benefit to their firms by establishing a culture of competitiveness (CC). Once the gaps between market demands and currently offered products are found and filled because of CC, the firms can go for MT. This would ensure that the firms enjoy at least some cycle time reduction benefits as soon as possible. Achieving such benefits is important strategically because of cycle time’s links with profits (Handfield & Nichols, 2002) and other firm-level metrics (Barney & Mackey, 2005).

**CC, KD, and MT**

Our first hypothesis proposes that CC improves the performance of cycle time which is accepted and both analyses supported this hypothesis. The influential role of MT (H4) has also been evident by the data. However, our data did not support any role of KD in improving cycle time (surprisingly, a negative impact was found but the magnitude is too small to neglect and insignificant as well). With regard to the basic questions, the results have important implications for organizations, especially for those that are interested in getting the benefits of a strategic chain management strategy, but the performance of their supply chains is poor in terms of CC and MT. It is difficult to achieve dramatic reorientation of supply chains (Hult et al., 2002), and it is less likely that the failure of the two elements can be quickly remedied. Our results indicate that such businesses can benefit from building CC, with the focus on MT, will ensure that the company has at least some of the advantages of reducing cycle time.

**The interaction between CC and KD**

On the basis of works of Hult et al. (2002, 2004) on ‘CC’ and ‘KD’ as catalyst to make improvements in the performance of cycle time in supply chains, we, on the basis of existing research, develop a framework conceptualizing and operationalizing the joint effect of both the CC and KD to improve cycle time performance. Specifically, using the theories of organizational learning, information processing and resource-based view of firm, we synthesized and proposed joint effect of CC and KD. Unluckily, the data did not support CC–KD joint effect on cycle time. The results infer that the firms whose supply chains are at good CC should strive to broaden and expand the horizon of CC to further improve cycle time even if they have not developed KD across supply chain partners. Same as advocated by Anderson, Håkansson, and Johanson (1994), we also suggest that firms should provide other partners a mechanism of CC that promotes entrepreneurial, innovativeness, and learning orientation to achieve a bonding that has been found to be crucial for complex supply chain relationships.

**The moderating role of MT**

In spite of having a positive impact on cycle time performance, the results present that MT has no statistically significant influence on CC–CTP as well as KD–CTP links. The
results indicate that the firms that are confident in terms of assessing and predicting MT cannot use this sense to decide whether to emphasize the development of both the CC and KD to their supply chains. Our results are likely to suggest that developing strong elements of both a culture of competitiveness and KD cannot neutralize the effects of the environment in their operations. From resource-based view, including the delivery of a unique convergence of a culture of competitiveness and KD is unlikely to provide a high level of inconsistency, which is necessary to create sustainable competitive advantage (cf. Schroeder et al., 2002).

Conclusion and future recommendations

Findings of our research show the improvements in cycle time through CC and MT. In past, there was an independent role of MT and CC specifically in Pakistan. In short, out of six, only two hypotheses (H1 and H4) are accepted and remaining H2, H3, H5, and H6 are rejected. This study was conducted in Pakistan in an uncontrived environment and also cross-sectional which restricts the generalizability of findings. However, based upon theoretical ground and results that are based upon a portfolio of firms, it is indicated that enterprises can get benefits from building CC, with the focus on MT, if not all but an enterprise can achieve at least some of the advantages of reducing cycle time. The conclusion is drawn based on the key informants’ information. Regardless of these limitations, findings explored vital steps in building understandings of why few firms extraordinarily perform than others, regarding ‘strategic supply chain management.’ Future research can address this research area with large sample size and taking into account some other aspects of strategic supply chain management such as supply chain flexibility components (operations, organizational, and information system) to seek supply chain performance with context of cycle time. Moreover, in terms of substantive issues, this study offers implications for firms that they are interested in gaining the benefits of strategic supply chain management as suggested by theory, but their supply chains currently rate poor in terms of KD. Finally, future studies can shed light on the postulate that manufactures with a higher degree of KD have an higher control about objective CTP (maybe using ICT) and this makes SC managers aware about real CTP and more demanding in terms of performances.

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**Appendix 1**

*Cultural competitiveness*

(a) Learning orientation (Hult, 1998)

- We agree that our ability to learn is the key to improvement in the supply management process.
- The basic values of this supply management process include learning as a key to improvement.
- Once we quit learning in the supply management process, we endanger our future.
- The sense around there is that employee learning is an investment not an expense.
(b) Innovativeness orientation (Hurley & Hult, 1998)

- Technical innovation, based on research results, is readily accepted in supply management.
- We actively seek innovative supply management ideas.
- Innovation is readily accepted in the supply management process.
- People are not penalized for new ideas that do not work.
- Innovation in our supply management process is encouraged.

(c) Entrepreneurial orientation (Naman & Slevin, 1993)

- We emphasize research and development and technological leadership.
- We initiate actions to which other organizations respond.
- We are fast to introduce new administrative techniques and operating technologies.
- We have a strong proclivity for high-risk projects.
- We are bold in our efforts to maximize the probability of exploiting opportunities.

Knowledge development
(a) Knowledge acquisition (Kohli et al., 1993)

- We meet regularly to find out what products we need in the future.
- We do a lot of in-house research on products we may need.
- We are fast to detect changes in our product preferences.
- We poll participants once a year to assess the quality of our supply management services.
- We are fast to detect fundamental shifts in the supply management environment.
- We periodically review the likely effect of changes in the supply management environment.

(b) Information distribution (Kohli et al., 1993)

- We frequently have interdepartmental meetings to discuss trends in supply management.
- We spend time discussing future supply management needs.
- We immediately know when something important happens in the supply management process.
- We share data on participant satisfaction in the supply management process on a regular basis.
- We alert participants when something important happens in the supply management process.

(c) Shared meaning (Hult et al., 2004)

- We share supply management information effectively between the supply management participants.
- We share supply management information effectively in the supply management process.
- We develop a shared understanding of the available supply management information.
- We develop a shared understanding of the implications of a supply management activity.
(d) Achieved memory (Moorman & Miner, 1997)

- We have a great deal of knowledge about the supply management process.
- We have a great deal of experience with the supply management process.
- We have a great deal of familiarity with the supply management process.
- We have invested a great deal of research and development in the supply management process.

Market turbulence (Jaworski & Kohli, 1993)

- In our kind of business, customers’ product preferences change quite a bit over time.
- Our customers tend to look for new products all the time.
- We have demand for our products from customers who never bought them before.
- New customers have product needs that are different from our existing customers.
- We continuously cater to many new customers.

Cycle time performance (Hult et al., 2002, 2004)

- The length of the supply management process is getting shorter every time.
- We have seen an improvement in the cycle time of the supply management process.
- We are satisfied with the speediness of the supply management process.
- Involving the participants in decision-making shortens the supply management process.
- Based on our knowledge of the supply management process, we think it is short and efficient.
- The length of the supply management process could not be much shorter than today.