

SUPPLY CHAIN QUALITY MANAGEMENT AND EMPLOYEE` s WELL-BEING

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Abstract

Well-being of employees is a rising concern, and world leaders promised a business environment, which will produce more than just economic growth. Supply chain quality management has boosted the competition among supply chains instead of business entities, which makes the business environment more challenging & results in more pressure towards employees. The present study undertake to establish how managers can ensure well-being of their staff in this stiff competition by promoting job satisfaction. The study thus develop & test that if supply chain quality management can promote job satisfaction only than the well-being of employees will increase using primary data. The results of our study suggest that, SCQM creates an integrated supply chain, where quality leadership positively develops employee's abilities for customer and supplier service, which increases there job satisfaction and well-being.

INTRODUCTION

"Ideally, the office should be a place protecting the safety and well-being of employees, while providing them with opportunities for better long-term health."

Centers for Disease Control and Prevention (Purecell, 2016)

Well-being reflects a person's pleasant experience in life (Liu & Liu, 2014). The high level of pleasant experience and emotions and low level of negative experience and emotions in one's family and work life is stated as well-being (Diener, Sapyta, & Suh, 1998). Well-being produces numerous benefits for firms, by creating a prosperous, engaged, and fertile workplace (Purecell, 2016). Work-engagement is positively correlated with intrinsic

and extrinsic motivation of staff (Yesim et al., 2017), engagement drives (Bakker2004Lack of focus and engagement reduces employee's well-being or EWB (Killingsworth, 2012). Business professionals worldwide are convinced that the progressive work engagement keeps employees connected to their firms (Jena & Pradhan, 2017; May, Gilson, & Harter, 2004). To achieve the comprehensive growth employee's well-being needs to be improved (Kahneman, Diener, & Schwarz, 1999). Efforts to encourage positive attitudes and actions play an important role in augmenting EWB (Huppert, 2009).

The global goals for sustainable development (to improve the human condition substantially by 2030) as agreed upon by world leaders in 2015,

explicitly mention “good health and well-being” to be the third important goal (globalgoals.org). In an initial version of sustainable development goals Griggs et al. (2013) identified the need to change current business practices and economic field to achieve the seventeen goals. The current business practices although improve economic growth but can adversely affect society’s sustainability (Green, 2015). Hence, changes to economic playing field means the inclusion of sustainability dimensions and broadening the initial concepts of quality in business, especially directed towards human and social betterment.

Total quality management (TQM) is a set of strategies for improvement in business performance, achievement of customer loyalty and satisfaction (Barbara, Cecilia, Alessandro, & Corrado, 2017). The idea of continuous improvement is to maximize efficiency of available resources, with no / minimal additional investment (Prado-Prado, García-Arca, & FernándezGonzález, 2018). Quality Management System provides rules and procedures for quality improvement and ensures employees are clear about their roles (Zelnik, Maletič, Maletič, & Gomišček, 2012). Deming was the first quality guru, who emphasized the importance of human resources in attainment of quality goals, as they produce quality products. Nine out of his fourteen points of management are related to improve work force pride, on job training, education, to remove worker’s fear and other humiliating controls and measures, promote interdepartmental human linkages, and to provide better leadership (Deming & Edwards, 1982). Later, Forker, Mendez, and Hershauer (1997) noticed that responsibility of quality has shifted from quality control personnel to every supply chain member: this finding revolutionized the idea of ‘supply chain quality management’ (SCQM). Integration of supply chain management and total quality management thus generated supply chain quality management (SCQM), which shifted the firms focus from product to process improvement (Robinson & Malhotra, 2005). SCQM fosters managers to develop a supply chain wide quality environment, to satisfy external and internal stakeholders; as

they all are reliant on each other for success of the supply chain (Soares, Soltani, & Liao, 2017). In SCQM, professionals use traditional TQM tools to check and ensure continuous improvement of every process included in a supply chain (Robinson & Malhotra, 2005).

The theory of SCQM inherits the major characteristics of TQM; but further improves and explains these dimensions, so is the case with human resource dimension. Earlier, the role of human resources was merely as producers of quality. Now firstly, they are not isolated from external environment i.e., human resources of the whole supply chain are under focus. Secondly, they are not just for quality creation, rather quality of personal life is their right too. The shift in world’s paradigm and the seventeen goals emphasized their rights and well-being. Some researchers found employees / executives are key resources in achieving organizational aims (Noorliza & Muhammad, 2006; Vanichchinchai & Igel, 2009). Hence, employee focused quality practices are required (Noorliza & Muhammad, 2006). Satisfaction of staff is essential for successful internal integration (Vanichchinchai & Igel, 2009), and external integration (Shou, Li, Park, & Kang, 2017). Moreover, the firms that take care of the employees, have motivated personnel; who in return are concerned about the firm’s objectives and remain aligned with its strategic directions (Vora, 2004). Therefore, the successful implementation of SCQM for achieving the whole supply chain’s objectives is highly dependent on the well-being of its human capital. There are additional incentives to keep employees well-off; like, happy employees are regular, loyal, energetic, they put extra efforts for their assignments and they attracts similar committed people (Gretchen & Christine, 2012; Yesim, A., & Andriana, 2017). The employeecustomer-profit chain also identifies how crucial employees are in the achievement of customer satisfaction and profit objectives (Rucci, Kirn, & Quinn, 1998). Extant quality management literature scrutinizes the effects of few quality management practices on the well-being of employees, such as; total quality

management is positively correlated with worker contentment (Boselie & van der Wiele, 2002), Continuous improvement augments organizational commitment & employees job satisfaction (Noorliza & Muhammad, 2006). Involved employees are more productive (Vora, 2004). Involvement acts as a selfmotivator for staff (Jena, Pradhan, & Panigrahy, 2017). The self-motivation is a positive state of mind, which improves well-being. Employee involvement is also identified as the significant factor for organizations' success (Fotopoulos, Psomas, & Vouzas, 2010).

The current literature indicates the effects of supply chain quality management practices on operational and financial performance of a firm, customer satisfaction and product / service quality (Sampaio et al., 2016; Soares et al., 2017). SCQM requires satisfaction of external and internal stakeholders (Soares et al., 2017). Although researchers discussed stakeholders to some extent, but the human factor still needs to be directly linked to the theory of SCQM, specifically highlighting the sustainable development goal of well-being.

We base justification for why our research is important on few concerns. First, Purecell (2016) states well-being at workplace is predominantly imperative, and the world's goal of human well-being to be achieved by 2030 (2015) urges to study well-being of employees. Second, well-being need to be discussed in connection with SCQM as satisfaction of internal customer along external customers is required by SCQM (Soares et al., 2017), human side is in focus. And, improving employee's focus improves their well-being and drives company's success (Killingsworth, 2012). In addition, well-off employees are regular, enthusiastic, loyal, energetic, they attracts similar people (Gretchen & Christine, 2012; Yesim et al., 2017); hence help in building a SCQM environment. The employee-customer-profit chain renders employees as an axis for business success (Rucci et al., 1998). Which means SCQM can act as an enabler for well-being. We further investigate if the role of job satisfaction is important to fully explain SCQM to well-being relation. Thus, we

propose to answer a research question. Is there any relation between SCQM and EWB and does job satisfaction mediates this relation?

The study used structural equation modeling to validate SCQM constructs in developing country's scenario. Bastas and Liyanage (2018) highlighted the need for SCQM research in developing countries. Sampaio et al. (2016) suggests SCQM field requires empirical investigation. Soares et al. (2017) asks for a common charter of SCQM. To fill these gaps study use 157 survey responses from a developing country like Pakistan using pre-operationalized SCQM constructs. Further, we test the hypothesized relation between SCQM and EWB using structural equation modeling.

LITERATURE AND HYPOTHESES

The roots of employee well-being are deep in quality management literature. In last two decades, TQM focus shifted from firm oriented practices to SC wide QM practices as Forker et al. (1997) identified quality is the responsibility of each SC member. Deming emphasized the importance of human resources in attainment of quality related goals, as they produce quality products (Deming & Edwards, 1982). TQM component of SCQM is mainly dependent on humans (Sila, 2007).

Employee Well-Being (EWB)

Well-being reflects an individual's comprehensive positive experience in life (Liu & Liu, 2014). Well-being is the positive assessment of a person, about his personal and professional life (Diener et al., 1998). Huppert (2009) mentioned autonomy, personal development and interest adds to well-being and improves work effectiveness.

EWB increases when a worker's mind focuses to what he is physically doing and vice versa (Killingsworth, 2012). Hectic work hours can reduce an EWB (Sebastiano, Belvedere, Grando, & Giangreco, 2017). Mind wandering reduces well-being and job productivity; research suggests that a worker's mind wanders on average fifty percent of the work time. That is why; managers are greatly concerned to help employees stay

focused for the benefit of employees and the company (Killingsworth, 2012). Beyond just being productive happy employees are regular, less likely to leave, do more than what is required from them, and attract similar committed people in their surroundings (Gretchen & Christine, 2012). Earlier psychology theories advocate humans universally hold psychological needs like self-acceptance, relatedness and the need for competence (Ryan & Deci, 2000); these overall psychological well-being characteristics are assessed by a positive well-being measure such as flourishing scale presented by Diener et al. (2010).

Supply Chain Quality Management

SCQM is a comprehensive systematic approach to enhance the performance of the backward, internal, and external process of a SC (Foster, 2008). SCQM is a SC wide holistic improvement strategy. Top management's direction and active participation of all employees to strengthen processes (build on given direction) are required for continuous improvement (Marksberry, Church, & Schmidt, 2014). Hence, SCQM needs to ensure people in the SC are involved in continuous improvement of their respective part of the SC.

Since 1997, numerous studies have laid the conceptual foundation for the SCQM concept. Robinson and Malhotra (2005) define SCQM as, explicit assimilation and coordination of every business process with SC companions, to measure and improve processes and products of that SC for the combined satisfaction of every customer and companion throughout the SC.

According to Kuei and Madu (2001), SCQM is equivalent to;

“SC = a production-distribution network,
Q = meeting market demands correctly, and achieving customer satisfaction rapidly and profitably;
M = enabling conditions and enhancing trust for SC quality”

Existing research indicates that SCQM practices can improve firms operational and financial performance (Jianlan, Yizhong, Yiliu, & Xia, 2016; Mahour, 2013; Sampaio et al.,

2016), improves product quality and customer satisfaction (Gu, Song, & Chen, 2017; Mahour, 2013; Robinson & Malhotra, 2005; Soares et al., 2017). SCQM plays an important role in SCI & increases collaboration (Jianlan et al., 2016; Robinson & Malhotra, 2005; Sampaio et al., 2016; Vanichchinchai & Igel, 2009); improves SC performance (Jianlan et al., 2016; Mahour, 2013; Sarrico & Rosa, 2016). In our study internal customer is under focus.

SCQM Practices

Operationalization of SCQM practices has received widespread consideration in the operations management field. We have shortlisted few studies, which proposed SCQM constructs based on literature reviews. Kaynak and Hartley (2008) shortlisted eight SCQM constructs after extensive literature review including, Management leadership, Customer focus, Training, Quality data and reporting, Employee relations, Supplier quality management, Process management, and Product service design. Chinho, Chu hua, and Kang Wei (2013) proposed strategic enabler of SCQM titled supplier relationship, process management, IT, Management support, HRM, strategic planning, knowledge management, and QM. Sampaio et al. (2016) presented a conceptual framework using four types of SCQM measures; the first group contains upstream SCQM practices measured by using supplier assessment and QM. The second group relates to internal SCQM processes, measured using service or product design, logistics and process management. The third group measures the downstream part of the SC, using customer focus construct, other support measures were SCI, Top management support, HRM, and Information parameters. Azizi, Maleki, Moradi-Moghadam, and Cruz-Machado (2016) used supplier quality management, customer focus, SC management leadership, SC quality strategies, Process approach, SC information systems, and HR development. Soares et al. (2017) operationalized quality leadership, supplier focus, customer focus, and supply-chain-integration; these constructs cover all levels of SCQM practices (internal and external), all the measures

significantly relate to the overall concept of SCQM and predicted quality performance of the firm. The study use the constructs proposed by Soares et al. (2017).

Quality Leadership (QL). QL is a combo of ability and tactics of top management; to create an environment within and between firms which is capable of continuous improvement for whole SC (Soares et al., 2017). A quality leader act as a role model by practicing and providing a persuasive vision and road-map for actions, he inspires and motivates followers to keep moving even with adversities (Jena et al., 2017).

Supplier Focus (SF). SF enables successful ties with supplier, which helps improving product-service innovation, acquirement of knowledge, and achievement of outcomes (Wichmann & Kaufmann, 2016; Zhou, Zhang, Sheng, Xie, & Bao, 2014). Soares et al. (2017) found SF to be the second most powerful influencer of quality performance in SCQM. Level of trust with suppliers increases their tendency to be better knitted in a firm's network, and to work more efficiently for common goals (Lo & Yeung, 2006). Hence, the SF is critical for the success of SCQM.

Customer Focus (CF). Customer experience is indispensable for primitive profit growth; it requires focus and investment to create customer value (Zorfias & Leemon, 2016). CF can increase customer retention, increasing overall financial stability of the firm (Danielle, Dhameeth, & Jung, 2017). In SCQM, CF is identified as a powerful quality influencer (Soares et al., 2017).

SCIntegration (SCI). Alignment in the SC is desirable to collaborate and improve performance, this alignment is referred as SCI (Huo, Zhao, & Lai, 2014). Integration facilitates the fruitful decision making by developing capabilities to better process data and information (Williams, Roh, Tokar, & Swink, 2013). SC quality performance is dependent upon various kinds of SCI (Huo et al., 2014). SCI includes external and internal integration. Internal integration considers integration of a firm's overall functions, and use of cross-functional teams (Schoenherr, 2012). External integration involves integration at

SC levels like customer level and supplier level integration (Zhao, Huo, Selen, & Yeung, 2011).

TQM recognizes the importance of human resource as a producer of quality, in SCQM the role of human resources becomes more important. Researchers mention importance of 'an employee' in earlier studies; employees / executives are key resources in achieving organizational aims (Noorliza & Muhammad, 2006; Susan, V., E., & E., 1995; Vanichchinchai & Igel, 2009). Punjaisri and Wilson (2011) also affirmed employees as critical organizational resources, they found skills and knowledge of employees can be used to gain and sustain competitive advantage. Prado-Prado et al. (2018) states, people learn by doing, and people do with interest if they are well off. Hence, an employee focused quality practices are required (Noorliza & Muhammad, 2006).

Quality of an employee's personal life and well-being is now the major concern of the world (globalgoals.org, 2015). This can be only achieved by changing traditional economic/business practices, directing towards social and human sustainability (Griggs et al., 2013). Which means the business practices effect well-being of staff, so does SCQM.

In SCQM, both internal & external customers are quality owners. Customer satisfaction is the prime objective of every business. Vora (2004) and some earlier researchers have proved that the external customer's contentment is very much reliant on the contentment of internal customer, i.e., employees. Only by increasing EWB (through care, trust and treatment as knowledge workers), businesses will be able to retain them.

While linking SCQM components to find effects on well-being, we explored that leadership drives a system's improvement; system contains employees, information processing, planning, and process management (Wilson & Collier, 2000). When the firm is exposed to intense competition in the SC, organizations adopt a quality leadership approach so that employees can be encouraged to take part with greater responsibility (Huo et al., 2014). According to Wofford, Goodwin, and Whittington (1998), QL capability is an efficient methodology to develop positive attitudes of

employees towards work; and objective attainment for firm (Judge & Piccolo, 2004). Positive experiences and attitudes constitutes well-being (Liu & Liu, 2014). Agote, Aramburu, and Lines (2016) evidenced that; behavior of leaders is a powerful influencer towards employee's emotions. Killingsworth (2012) identified that managers role is critical to help employees stay focused, as lack of focus reduces EWB.

Customer focus a great predictor of a firm's performance in SCQM (Soares et al., 2017). Companies need to go beyond satisfying customer; recent trends require for emotional connections with customers (Zorfas & Leemon, 2016). Positive emotive presentation and behavior of employee is an accepted tactical instrument for CRM (Wang et al., 2017). Hence, CF requires employees to create temporary positive emotions. According to Killingsworth (2012), on job happiness depends on the temporary experiences. This means CF can positively effect EWB.

Supplier focus is another excellent indicator of a company's strength in SCQM (Soares et al., 2017). The era of adversarial relation with partners has ended, now focus is on building mutual competencies rather than just exploiting other's competencies. "Exploiting power may work in the short run, but it is self-defeating in the long run" (Nirmalya, 1996). The SF is required to control the source of ambiguity and to better integrate in every echelon of SC (Kamal & Irani, 2014). Companies are dependent on their supply partners for cost & process time reduction, and quality enhancement. Experts suggests to build supplier close-knit networks for continuous improvement and mutual prosperity (Liker & Choi, 2004). The increased inclination of SC partners towards persuasion of common goals of the whole SC is derived from the trust level with the partner firm (Lo & Yeung, 2006). The trust level is associated with the corresponding employees in the partner firm; and well-off employees openly and heartedly communicate and collaborate with supply partners. Relationships between companies are actually relations between their workers.

SCI is a vital source for quality improvement. Manufacturing firm's SCQM requires successful integration of SC partners at all levels (within-firm and between-firm) to achieve customer satisfaction (Kamal & Irani, 2014). Huo et al. (2014) proved in his study of SC integration that, employee involvement strongly relates to external SC quality integration (i.e., customers & suppliers). SCI requires from companies to train, educate, and empower their staff for a collaborative self-directive culture to prevail. Employee participation in decision-making, training for skill developments and introducing / upgrading performance-based incentives motivates workers to increase their work efforts (Boxall & Purcell, 2011). Information sharing is critical to SCI; well-informed employees are good and productive employees, because they feel involved (Vora, 2004). Productivity adds to well-being of workers. Moreover, employees involved in assignments show commitment and trust towards organization, it acts as a selfmotivator for them (Jena et al., 2017). The self-motivation in itself is a positive state of mind i.e., creates positive EWB.

Summing up, the business success is dependent on employees, EWB is critical to keep employees motivated and productive. It will also help in the reduction of annual cost of insurance premiums. Directly and in directly, EWB (social prosperity) is for the greater benefit of the firm itself (economic prosperity), and SCQM has the ability to effect EWB. Thus, we propose following hypothesis. Hypothesis I: SCQM positively effects employee's well-being

Mediating Role of Job satisfaction

The 'employee-customer-profit chain' renders employees as an axis around which the whole profit channel of the company revolves, it identifies that if elements effecting workers attitudes can be modified, they can be better retained, which derives customer satisfaction resulting in achievement of business goals (Rucci et al., 1998). The positive attitude increases EWB. This strikes us with an idea that there is a need to change workers attitude in order to create positive attitude or well-being. This indicates the SCQM to

well-being relation cannot be fully explained without a mediator.

Job-satisfaction. We found evidence from the literature that job satisfaction is a critical element of employee well-being. Mihalic (2008) defines JS as, “A pleasant or positive emotional state resulting from the perception of work, conception and assessment of the work environment, work experience and the perception of all elements of the work and workplace” (Cited in Álvarez-García, Del Río-Rama, Saraiva, & Ramos-Pires, 2016). Some researchers accredit an emotional representation of JS like an affective orientation of a worker towards his work (James, 2001).

On job happiness depends on the momentary and repetitive experiences of employees like, routine interactions with coworkers, the projects they are involved in, their daily contributions; and job happiness is less dependent on the huge but constant salary or a significant title (Killingsworth, 2012). This means that for attaining well-being, SCQM can probably effect job satisfaction. Like firstly, QL empowers subordinates, which boosts positive attitude of employees (Seibert, Wang, & Courtright, 2011), and psychologically augments JS (Amundsen & Martinsen, 2015). As workers are dependent on their managers for process guidelines and other rules and policies; so, QL can increase or decrease, job pressure on workers.

Secondly, customer evaluates his experience by relating to association with service provider, above and beyond the product or service provided (Hean & Pang, 2010). The rating from customer adds to employee’s internal satisfaction. Therefore, the level and quality of CF causes variation in JS level. The customer is an asset for the firms, and the resultant asset management activities influences structure and staffing policies (Keiningham, Aksoy, & Bejou, 2006). This ability of CF to influence staffing policies and rewards creates job-pressure among workers, which can reduce JS and will result in lower EWB.

Thirdly, in an integrated network uncertainties are managed effectively and decisions are reliable (Wichmann & Kaufmann, 2016), and performance of employee and firm increases which means higher JS. A well-knitted SC provides

a wider and clearer picture to the participants; thus ensures the accuracy of decisions taken. A publication in Harvard business review mentions, innovative solutions are impossible without the larger impact of these solutions is clear to the doer; people contribute effectively when the impact of their work is visible to them

(Gretchen & Christine, 2012). In an integrated firm, IT capabilities facilitate quick communication inside and outside the company. Better communication results in higher level of JS (Jacobs, Wantao, & Roberto, 2016). Thus, SCI improves the promptness of decisions and productivity of a worker, by facilitating communication, information-acquisition, and fast feedback loops; hence, a worker’s JS escalates in an integrated SC environment, creating positive state of mind i.e., EWB.

The fourth component of SCQM, supplier focus can help achieve SCI and excellent mutual benefits. Improperly handled relation with suppliers negatively affects SCI (Shou et al., 2017). SF also improves an organization’s ability of profit growth (Martin & Grbac, 2003). Employees, which are part of a growing firm, feel satisfaction with their jobs. Companies require supplier orientation from their employees, they are required to respect suppliers, to learn supplier’s business for discovering growth opportunities for both the firms, and they are required to be conscious and share relevant information only (Nirmalya, 1996). On the other hand, the desired level of supplier focus in a firm creates pressure requirements, lowering JS of staff. Only the employees, who are able to develop excellent supplier focus, reap long-term benefits from such relations; they are satisfied with their jobs & their well-being increases.

Finally, combined effect of SCQM components creates productive environment. The role of a leader is to facilitate employees in building high quality relations with customers and suppliers to ensure goal achievement; the adverse of which causes dissatisfaction for the staff (Lucas, Babakus, & Ingram, 1990). In this way, QL can increase or decrease stressors caused by tough requirements of

customer and supplier focus which then effects on the level of JS.

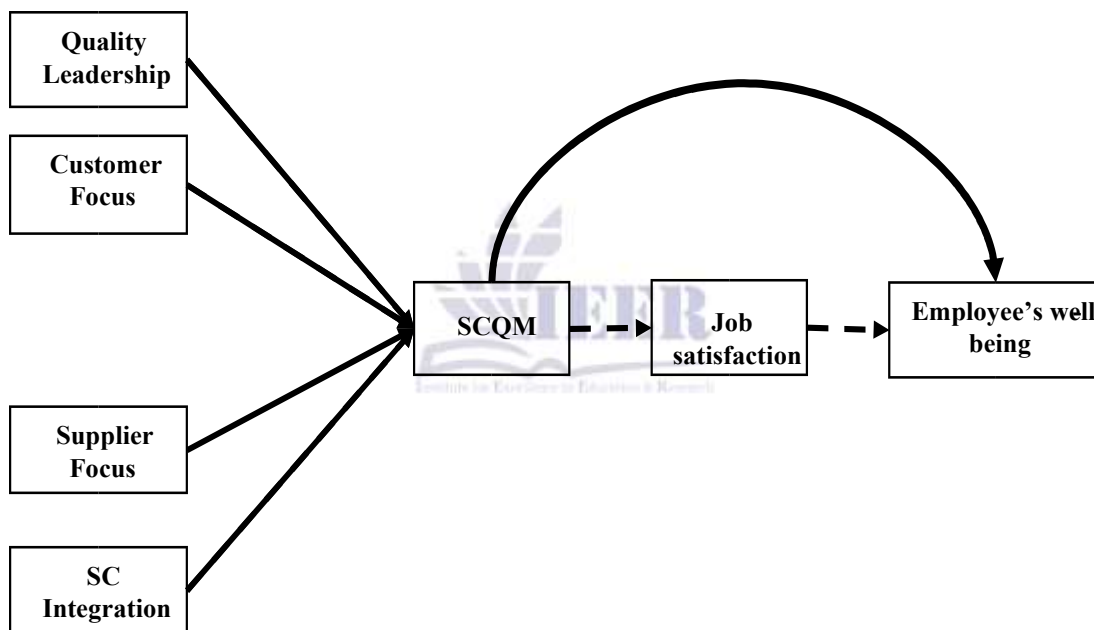
The Job-demand-control model by Karasek (1979) suggests, well-being will change along variation in job-demands. Meanwhile, companies also understand that the role of well-off and trained employee is critical in achievement of such objectives, so retention is important (employee’s repetitive and same training is difficult and expensive), so management deliberately tries to balance these pressure situations and try to retain employees, which increases JS. Satisfaction of employee is essential for successful internal SCI,

and external integration depends on how well firms are integrated internally (Shou et al., 2017). Moreover, the firms that take care of the employees, have motivated personnel; who in return are concerned about the firm’s objectives and remains aligned with its strategic directions (Vora, 2004). Therefore, the wellbeing of human capital is highly dependent on SCQM, if it is able to increase job satisfaction.

Thus we hypothesize the following relation.

Hypothesis II: Job satisfaction mediates the positive relationship of SCQM and employee’s well-being

Proposed Model



METHODS

To validate the relationships established through literature in previous sections, we collected first hand data. Quantitative strategy based on post-positivist ontology was used (Crotty, 1998).the present study used cross sectional design. Our questionnaire includes validated constructs with face and content validity already well-established. However, we conducted a pilot test to validate face and content validity in Pakistani scenario. In our pilot test, low-level employees were not able to understand our questionnaire, so we did not

included any of less than managerial grade employees in our study. The second issue was

length of our instrument. We deliberately kept original SCQM construct as one objective of our research is collecting validation evidence for SCQM construct reported by Soares et al. (2017). He measured SCQM using scales of CF, SF, SCI, and QL. The scales are reliable; Original Cronbach’s alpha values are SCI = 0.93, CF = 0.92, SF = 0.92, QL = 0.92, whereas in our pilot testing these turned out to be SCI = 0.72, CF = 0.87, SF = 0.90, QL = 0.95.

EWB was measured using Diener et al. (2010) flourishing-scale. The study used JS scale adapted from Agho, Price, & Mueller (1992). The Study used a web-based survey and print version of the survey to collect the desired data. Employees of firms working in any company, which is a part of manufacturing supply chains and can understand supply chain quality practices, were respondents

for our survey. Seventy-three percent firms in our sample have more than five hundred employees (Table 1); this is favorable as quality practices are more visible in medium and large companies. The relevance of data to SCQM is ensured as majority of our respondents belonged to supply chain and related roles, or they rank high enough to understand SCQM practices.

Table 1-INDUSTRIES REPRESENTED IN THE SAMPLE

Position in Supply Chain	Frequency	Percent
Raw Material supplier	7	4%
Component Manufacturer	39	25%
End Product Producer	68	43%
Distributor/ wholesaler / Retailor	43	27%
Organization History		
Less than 5 years	18	11%
5 ~ 10 years	19	12%
11~ 20 years	18	11%
More than 20 years	100	64%
Not Provided	2	1%
Revenue (PKR)		
Less than 150 Million	6	4%
151 ~ 300 Million	18	11%
301 ~ 450 Million	19	12%
451 ~ 700 Million	25	16%
701 m & above	85	54%
Not Provided	4	3%

Sample and Procedure

We developed sampling frame using Karachi stock exchange lists and local online business directories. List includes FMCG, pharma, food, textile, footwear, engineering, and other firms involved in some kind of production supply chain. List includes companies operating in Lahore, Karachi, Sargodha, Multan, and Islamabad. This generated a list of 550 companies. We draw a random sample of 150 companies using excel RANDBETWEEN command. We than contacted two hundred employees of sample firms via

LinkedIn, and requested to refer to their colleagues as well. We received sixty responses through these activities, after on average two reminders. Some firms / employees from our sample list had not joined LinkedIn, we contacted them through emails and telephone calls, but response rate of this method was zero percent. Due to small sample-size, we decided to use convenience sampling and got the survey form distributed in supply chain groups of few companies. We received 107 responses through this method. Out of total 167 responses, 157 are usable.

Data Analysis

While analyzing for missing values, we eliminated four responses as they contain more than twenty percent missing values. In remaining data, eighteen variables have one percent missing values, and three variables have three percent missing values, we retain these items for the analysis due to small sample size. To judge the randomness of missing data study applied Little’s MCAR test. Since the $p > \alpha$ (Little's MCAR test: Chi-Square = 427.049, DF = 465, Sig. = .896), so the test is not significant; hence we conclude the data is completely missing at random (MCAR pattern exists). As the data was completely missing at random and extent is also below 10% so we can impute missing data using numerous

methods. Missing values were then imputed using median for the scales.

Confirmatory Factor Analysis. In order to establish the construct validity of measures, we performed confirmatory factor analysis. Over all model fit was adequate (CFI>0.90, RMSEA<0.08). The results indicated our measures have convergent validity as AVE for all constructs are above 0.5 (Table 2). Our constructs are also reliable as indicated by the composite reliability (CR) and Cronbach Alpha’s of 0.7 for each construct. The discriminant validity is also present as square-root of AVE is greater than inter-factor correlations. Information about convergent validity and discriminant validity is provided in Table 2.

TABLE 2- CONVERGENT AND DISCRIMINANT VALIDITY

	CR	AVE	1	2	3
Job Satisfaction	0.85	0.58	0.76		
Well-Being	0.81	0.52	0.55	0.72	
Supply Chain Quality Management	0.85	0.58	0.61	0.37	0.76

Multivariate assumptions. We performed linearity test using SPSS and all the relationships were sufficiently linear, hence covariance based SEM can be performed. The multicollinearity issue was under control as VIF for CF, SF, QL, SCI were below 3.05.

Common Method Bias Test. The study used different Likert scales for dependent and independent variables to avoid method bias, like for independent variables seven-point Likert with nodes of strongly disagree to strongly and for dependent variable from never to all the time. We further use Harman’s single factor test to check common method bias in our instrument. The single factor accounted for only 33% of the covariance among the factors, which supports the

common method variance is not significant in our instrument.

Structural Model Results. Table 3 and Figure 2 provide the results for our hypotheses tests. Model fit indices of our model ($\chi^2 / df = 1.49$, CFI = 0.935, and RMSEA = 0.057) are adequate and provide support for hypothesis-1 that SCQM positively and significantly effects EWB. We calculated indirect effect using 2000 bootstrap samples with 95 percent confidence interval. Our mediated model showed adequate fit ($\chi^2 / df = 1.5$, CFI = 0.917, and RMSEA = 0.059). Based on the results of SEM, we found support for our hypothesis-2. Thus the results supports that JS fully mediates the path from SCQM to EWB.

TABLE 3-HYPOTHESES RESULTS

Hypothesis	Direct Effect	Indirect effect	Conclusion
SCQM→JS→EWB *** P<0.01	0.061	0.312***	Full Mediation

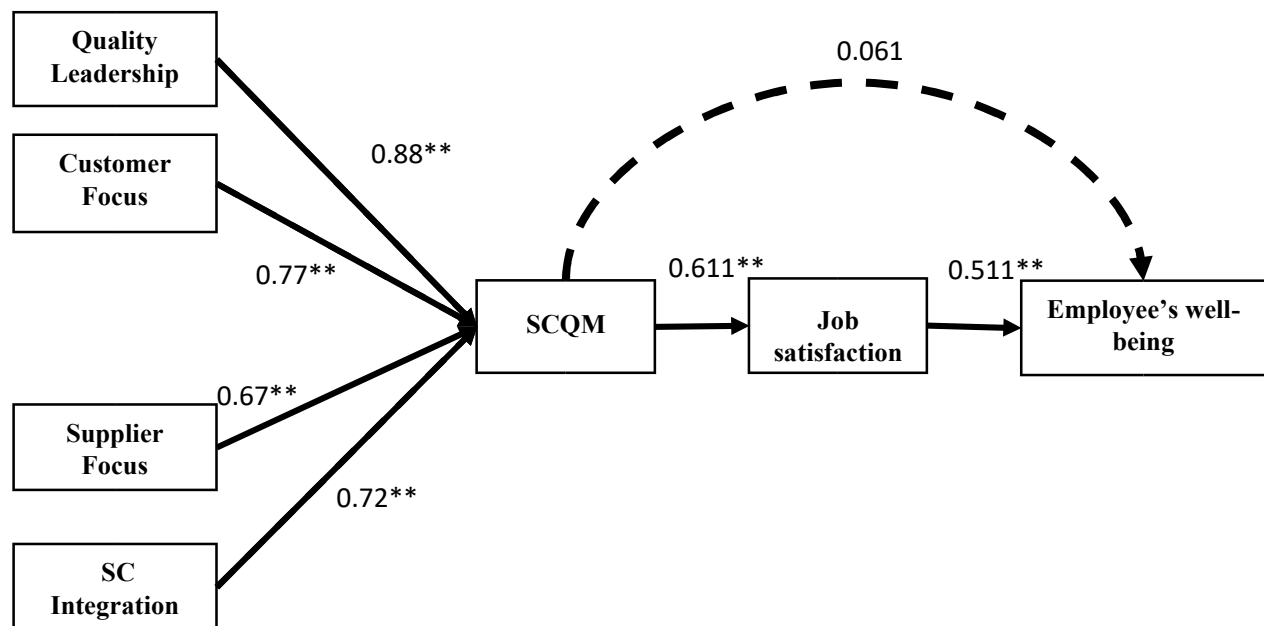


FIGURE 2--RESULTS OF HYPOTHESES TESTING

DISCUSSION AND IMPLICATIONS

We performed SEM on data collected from 157 survey respondents belonging to companies working at any tier in manufacturing supply chains. The results of SEM supported our estimation that SCQM positively effects well-being of staff by increasing job satisfaction. In addition, dealing with individual components of SCQM, only QL and SCI positively and significantly related to job satisfaction, this indicates when combined in SCQM possible burden of CF and SF is removed by QL and SCI and thus SCQM creates an overall synergy which positively and significantly effects well-being of staff.

We suggest based on our study that managers can play a pivotal role in building an overall SCQM environment, firstly they need to learn quality related concepts and skills, secondly by empowering employees, and thirdly by encouraging their involvement in quality management & improvement processes. Measuring & evaluating satisfaction factors of internal & external customers increases the likelihood of right action by the management, which creates positivity between both parties. Further, formal supplier evaluation will ensure the

healthy supply base in long run and recognition of supplier promotes positive relation with supplier, which in turn reduces pressure on employees and make supplier relations easily manageable for them.

Our study contributes to SCQM and well-being literature. Firstly, this study provides support that QL and SCI build an overall synergy along SF and CF. This synergy i.e., SCQM helps managers to improve on job well-being of their staff, which improves social prosperity and provides better human resource to the business sector. Prosperous, engaging and a fertile work place is need of the day, workers spend one third of their life at workplace (Gallup, 2014).

Secondly, as SCQM has shifted the scope of QM from optimization of a firm to the whole SC. A weak link anywhere in the SC is not affordable; this has increased the pressures on employees, which causes reduction in JS and EWB. Our framework provides operational insights to managers that it is not impossible to mitigate pressure effects of CF and SF if they are able to adopt the relevant practices presented in SCQM framework. This will make them able to ensure business success while keeping employees well off.

Thirdly, we contribute to theory, as there are few studies in the field of SCQM regarding validation of SCQM framework. Empirical evidence collected in this study strengthens the SCQM literature; this facilitates further development in the field. Fourthly, we adds important dimension of job satisfaction and well-being.

Fifthly, fifty six percent of the world is composed of developing countries (Bank, 2018; unstats.un.org, 2018). Our empirical analysis in developing country helps us trace out dimensions of SCQM most relevant to these nations; this helps in improvement of human living standard and reduces exploitation of human rights by industry.

Finally, we contribute to theory by discovering that SCQM does relate to well-being of staff. The major contribution comes with the finding of mediator of above relation, which is 'job satisfaction'. Our findings supported that JS fully mediates the positive relation between SCQM and well-being of employees. Thus in absence of job satisfaction, positive EWB is out of question even in SCQM environment. We found CF, SF, SCI and QL does strongly relate to SCQM as proposed by Soares et al. (2017).

LIMITATIONS AND FUTURE RESEARCH IMPLICATIONS

We base our study merely on manufacturing supply chains; there is a need of similar validation in service sector. There is a need to study well-being at all levels of staff in any supply chain, our study has this limitation as the data collected in our study is majorly from lower middle to top management, as we had to drop workers and lower segments due to little understanding of SCQM construct and/or illiteracy of English language. This may require producing a translated version of survey instrument. Another limitation of our study is small sample size, which indicates that further empirical inquiry is required to prove the relations hypothesized in our study.

REFERENCES

- Agote, L., Aramburu, N., & Lines, R. 2016. Authentic Leadership Perception, Trust in the Leader, and Followers' Emotions in Organizational Change Processes. *The Journal of Applied Behavioral Science*, 52(1): 35-63.
- Álvarez-García, J., Del Río-Rama, M. d. l. C., Saraiva, M., & Ramos-Pires, A. 2016. Dependency relationships between critical factors of quality and employee satisfaction. *Total Quality Management & Business Excellence*, 27(5-6): 595-612.
- Amundsen, S., & Martinsen, Ø. L. 2015. Linking Empowering Leadership to Job Satisfaction, Work Effort, and Creativity: The Role of Self-Leadership and Psychological Empowerment. *Journal of Leadership & Organizational Studies*, 22(3): 304-323.
- Azizi, R., Maleki, M., Moradi-Moghadam, M., & Cruz-Machado, V. 2016. The impact of knowledge management practices on supply chain quality management and competitive advantages. *Management and Production Engineering Review*, 7(1): 4-12.
- Bank, W. 2018. World Data Bank.
- Barbara, A., Cecilia, S., Alessandro, R., & Corrado, G. 2017. A systematic literature review on total quality management critical success factors and the identification of new avenues of research. *The TQM Journal*, 29(1): 184-213.
- Bastas, A., & Liyanage, K. 2018. Sustainable supply chain quality management: A systematic review. *Journal of Cleaner Production*, 181: 726-744.
- Boselie, P., & van der Wiele, T. 2002. Employee perceptions of HRM and TQM, and the effects on satisfaction and intention to leave. *Managing Service Quality: An International Journal*, 12(3): 165-172.
- Chinho, L., Chu-hua, K., & Kang-Wei, C. 2013. Identifying critical enablers and pathways to high performance supply chain quality management. *International Journal of*

- Operations & Production Management*, 33(3): 347-370.
- Crotty, M. 1998. *The foundations of social research: Meaning and perspective in the research process*: Sage.
- Danielle, K. M., Dhameeth, G. S., & Jung, K. S. 2017. *Modeling Moderating Effects of Customer Lifetime Value (CLV) and Referral Value (CRV) on Customer Service of Frontline Employees for Customer and Organizational Satisfaction: A Comparative Analysis*. Paper presented at the 5th International MT Research Conference Milan.
- Deming, W. E., & Edwards, D. W. 1982. *Quality, productivity, and competitive position*: Massachusetts Institute of Technology, Center for advanced engineering study Cambridge, MA.
- Diener, E., Sapyta, J. J., & Suh, E. 1998. Subjective Well-Being Is Essential to Well-Being. *Psychological Inquiry*, 9(1): 33-37.
- Diener, E., Wirtz, D., Tov, W., Kim-Prieto, C., Choi, D.-w., Oishi, S., & Biswas-Diener, R. 2010. New Well-being Measures: Short Scales to Assess Flourishing and Positive and Negative Feelings. *Social Indicators Research*, 97(2): 143-156.
- Forker, L. B., Mendez, D., & Hershauer, J. C. 1997. Total quality management in the supply chain: What is its impact on performance? *International Journal of Production Research*, 35(6): 1681-1702.
- Foster, S. T. 2008. Towards an understanding of supply chain quality management. *Journal of Operations Management*, 26(4): 461-467.
- Fotopoulos, C. V., Psomas, E. L., & Vouzas, F. K. 2010. Investigating total quality management practice's inter-relationships in ISO 9001:2000 certified organisations. *Total Quality Management & Business Excellence*, 21(5): 503-515.
- globalgoals.org. 2015. The global goals for sustainable development, Vol. 2018.
- Green, M. 2015. How we can make the world a better place by 2030. *TED Talks*.
- Gretchen, S., & Christine, P. 2012. Creating sustainable performance. *Harvard Business Review*, 90(1): 92-99.
- Griggs, D., Stafford-Smith, M., Gaffney, O., Rockström, J., Öhman, M. C., Shyamsundar, P., Steffen, W., Glaser, G., Kanie, N., & Noble, I. 2013. Policy: Sustainable development goals for people and planet. *Nature*, 495(7441): 305.
- Gu, P., Song, R., & Chen, X. 2017. Management Practice of Supply Chain Quality Management in Service-oriented Manufacturing Industry. *MATEC Web Conf.*, 100: 05035.
- Hean, T. K., & Pang, J. 2010. Customer Reactions to Service Separation. *Journal of Marketing*, 74(2): 55-70.
- Huo, B., Zhao, X., & Lai, F. 2014. Supply Chain Quality Integration: Antecedents and Consequences. *IEEE Transactions on Engineering Management*, 61(1): 38-51.
- Huppert, F. A. 2009. Psychological well-being: Evidence regarding its causes and consequences. *Applied Psychology: Health and Well-Being*, 1(2): 137-164.
- Jacobs, M. A., Wantao, Y., & Roberto, C. 2016. The effect of internal communication and employee satisfaction on supply chain integration. *International Journal of Production Economics*, 171: 60-70.
- James, P. L. 2001. Reflections on the determinants of voluntary turnover. *International Journal of Manpower*, 22(7): 600-624.
- Jena, L. K., & Pradhan, S. 2017. Joy at work: Initial measurement and validation in Indian context. *The Psychologist-Manager Journal*, 20(2): 106.
- Jena, L. K., Pradhan, S., & Panigrahy, N. P. 2017. Pursuit of organisational trust: Role of employee engagement, psychological well-being and transformational leadership. *Asia Pacific Management Review*.

- Jianlan, Z., Yizhong, M., Yiliu, T., & Xia, L. 2016. Supply chain quality management: an empirical study. *International Journal of Contemporary Hospitality Management*, 28(11): 2446-2472.
- Judge, T. A., & Piccolo, R. F. 2004. Transformational and transactional leadership: a metaanalytic test of their relative validity. *Journal of applied psychology*, 89(5): 755.
- Kahneman, D., Diener, E., & Schwarz, N. 1999. *Well-being: Foundations of hedonic psychology*. New York: Russell Sage Foundation.
- Kamal, M. M., & Irani, Z. 2014. Analysing supply chain integration through a systematic literature review: a normative perspective. *Supply Chain Management: An International Journal*, 19(5/6): 523-557.
- Karasek, R. A. 1979. Job Demands, Job Decision Latitude, and Mental Strain: Implications for Job Redesign. *Administrative Science Quarterly*, 24(2): 285-308.
- Kaynak, H., & Hartley, J. L. 2008. A replication and extension of quality management into the supply chain. *Journal of Operations Management*, 26(4): 468-489.
- Keiningham, T. L., Aksoy, L., & Bejou, D. 2006. The Future of Managing Customers as Assets. *Journal of Relationship Marketing*, 5(2-3): 133-138.
- Killingsworth, M. 2012. The Future of Happiness Research, *Harvard Business Review*.
- Kuei, C.-H., & Madu, C. N. 2001. Identifying critical success factors for supply chain quality management (SCQM). *Asia Pacific Management Review*, 6(4): 409-423.
- Liker, J., & Choi, T. Y. 2004. Building Deep Supplier Relationships, *Harvard Business Review*.
- Liu, N. C., & Liu, W. C. 2014. The effects of quality management practices on employees' wellbeing. *Total Quality Management & Business Excellence*, 25(11-12): 1247-1261.
- Lo, V. H. Y., & Yeung, A. 2006. Managing quality effectively in supply chain: a preliminary study. *Supply Chain Management: An International Journal*, 11(3): 208-215.
- Lucas, G. H., Babakus, E., & Ingram, T. N. 1990. An empirical test of the job satisfaction/turnover relationship: Assessing the role of job performance for retail managers. *Journal of the Academy of Marketing Science*, 18(3): 199-208.
- Mahour, M. P. 2013. Supply chain quality management: An inter-organizational learning perspective. *International Journal of Quality & Reliability Management*, 30(5): 511-529.
- Marksberry, P., Church, J., & Schmidt, M. 2014. The Employee Suggestion System: A New Approach Using Latent Semantic Analysis. *Human Factors and Ergonomics in Manufacturing & Service Industries*, 24(1): 29-39.
- Martin, J. H., & Grbac, B. 2003. The Effects of Supplier Focus, Customer Responsiveness and Strategy Type on Growth in a Transition Economy. *Journal of Marketing Theory and Practice*, 11(2): 43-55.
- May, D. R., Gilson, R. L., & Harter, L. M. 2004. The psychological conditions of meaningfulness, safety and availability and the engagement of the human spirit at work. *Journal of Occupational and Organizational Psychology*, 77(1): 11-37.
- Nirmalya, K. 1996. The Power of Trust in Manufacturer-Retailer Relationships, *Harvard Business Review*.
- Noorliza, K., & Muhammad, H. A. H. A. 2006. The effects of total quality management practices on employees' work-related attitudes. *The TQM Magazine*, 18(1): 30-43.
- Prado-Prado, J. C., García-Arca, J., & Fernández-González, A. J. 2018. People as the key factor in competitiveness: a framework for success in supply chain management. *Total Quality Management & Business Excellence*: 1-15.

- Punjaisri, K., & Wilson, A. 2011. Internal branding process: key mechanisms, outcomes and moderating factors. *European Journal of Marketing*, 45(9/10): 1521-1537.
- Purecell, J. 2016. Employers Need to Recognize That Our Wellness Starts at Work, *Harvard Business Review*.
- Robinson, C., & Malhotra, M. K. 2005. Defining the concept of supply chain quality management and its relevance to academic and industrial practice. *International Journal of Production Economics*, 96(3): 315-337.
- Rucci, A. J., Kirn, S. P., & Quinn, R. T. 1998. The employee-customer-profit chain at Sears. *Harvard Business Review*, 76: 82-98.
- Ryan, R. M., & Deci, E. L. 2000. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American psychologist*, 55(1): 68.
- Sampaio, P., Carvalho, M. S., Fernandes, A. C., Binh An, D. T., Quang, H. T., & Vilhenac, E. 2016. An extensive structural model of supply chain quality management and firm performance. *International Journal of Quality & Reliability Management*, 33(4): 444-464.
- Sarrico, C. S., & Rosa, M. J. 2016. Supply chain quality management in education. *International Journal of Quality & Reliability Management*, 33(4): 499-517.
- Schoenherr, T. 2012. The role of environmental management in sustainable business development: A multi-country investigation. *International Journal of Production Economics*, 140(1): 116-128.
- Sebastiano, A., Belvedere, V., Grando, A., & Giangreco, A. 2017. The effect of capacity management strategies on employees' well-being: A quantitative investigation into the long-term healthcare industry. *European Management Journal*, 35(4): 563-573.
- Seibert, S. E., Wang, G., & Courtright, S. H. 2011. Antecedents and consequences of psychological and team empowerment in organizations: a meta-analytic review. *Journal of Applied Psychology*, 96(5): 981.
- Shou, Y., Li, Y., Park, Y. W., & Kang, M. 2017. The impact of product complexity and variety on supply chain integration. *International Journal of Physical Distribution & Logistics Management*, 47(4): 297-317.
- Soares, A., Soltani, E., & Liao, Y.-Y. 2017. The influence of supply chain quality management practices on quality performance: an empirical investigation. *Supply Chain Management: An International Journal*, 22(2): 122-144.
- Susan, A. M., V., T. R., E., L. E., & E., L. G. 1995. Total quality management: practice and outcomes in the largest US firms. *Employee Relations*, 17(3): 26-41.
- unstats.un.org. 2018. UN Stats.
- Vanichchinchai, A., & Igel, B. 2009. Total quality management and supply chain management: similarities and differences. *The TQM Journal*, 21(3): 249-260.
- Vora, M. K. 2004. Creating employee value in a global economy through participation, motivation and development. *Total Quality Management & Business Excellence*, 15(5-6): 793-806.
- Wang, Z., Singh, S. N., Li, Y. J., Mishra, S., Ambrose, M., & Biernat, M. 2017. Effects of Employees' Positive Affective Displays on Customer Loyalty Intentions: An Emotions-as-Social-Information Perspective. *Academy of Management Journal*, 60(1): 109-129.
- Wichmann, B. K., & Kaufmann, L. 2016. Social network analysis in supply chain management research. *International Journal of Physical Distribution & Logistics Management*, 46(8): 740-762.

- Williams, B. D., Roh, J., Tokar, T., & Swink, M. 2013. Leveraging supply chain visibility for responsiveness: The moderating role of internal integration. *Journal of Operations Management*, 31(7): 543-554.
- Wilson, D. D., & Collier, D. A. 2000. An empirical investigation of the Malcolm Baldrige National Quality Award causal model. *Decision sciences*, 31(2): 361-383.
- Wofford, J. C., Goodwin, V. L., & Whittington, J. L. 1998. A field study of a cognitive approach to understanding transformational and transactional leadership. *The Leadership Quarterly*, 9(1): 55-84.
- Yesim, Y. Z., A., R. B., & Andriana, R. 2017. Facets of job satisfaction and work engagement. *Evidence-based HRM: a Global Forum for Empirical Scholarship*, 5(3): 248-265.
- Zelnik, M., Maletič, M., Maletič, D., & Gomišček, B. 2012. Quality management systems as a link between management and employees. *Total Quality Management & Business Excellence*, 23(1): 45-62.
- Zhao, X., Huo, B., Selen, W., & Yeung, J. H. Y. 2011. The impact of internal integration and relationship commitment on external integration. *Journal of operations management*, 29(1-2): 17-32.
- Zhou, K. Z., Zhang, Q., Sheng, S., Xie, E., & Bao, Y. 2014. Are relational ties always good for knowledge acquisition? Buyer-supplier exchanges in China. *Journal of Operations Management*, 32(3): 88-98.
- Zorfas, A., & Leemon, D. 2016. An Emotional Connection Matters More than Customer Satisfaction, *Harvard Business Review*.