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The Moderating Role of Innovation in the Relationship between Soft TQM and Lean Practices

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The concept of TQM practices and innovation has become major component of competitiveness from a variety of disciplines. The prime objective of the current study is to investigate the impact of soft total quality management practices, namely process management, leadership, customer focus, information and analysis, strategic planning and people management on the lean practices. In addition to that, the moderating role of innovation on the relationship between a variety of disciplines. To achieve the objective of the study we have used the structural equation modelling approach using SEM-PLS. Data of 320 firms was collected through an adopted questionnaire designed using the five-point Likert scale. The results reveal positive and significant effects of TQMP on the lean practices. Additionally, business innovation appeared as a significant moderator. The study will be helpful for researchers, practitioners, managers and policy makers in making decisions about TQM practices, business innovation, and lean practices.

Key words: *TQM, Innovation, Lean practices.*

Introduction

Conceptually, product and service innovation are concerned with the ability of organization to offer a new product or service, while process innovation is based on different terms including administrative, technical, organizational and behavioural processes. Meanwhile, Zeinali and Notash (2010) views innovation in terms of organizational and behavioural innovation. Organizational innovation incorporates original figures of management such as TQM. However, behavioural innovation, which is mainly based on the innovative skills of human resource, is considered as an essential aspect that highlights innovative outcomes and

its deficiency acts as a barrier to innovation (Wang & Ahmed, 2004). It is a challenge for organizations to promote innovation especially with the limit of employee's participation. This pressure can be further increased due to the imposed standards which are critical for the accreditation of many organizations in the fields of healthcare, education and manufacturing. Accreditation standards are important for the organizations to meet the legitimate requirements of quality and safety that consumers, regulators and other businesses demand of products and services. Regarding these standards, Petkovic, Seddon, Rebelo, and Pereira (2011) illustrated how Ohno; the father of Toyota production system (TPS) had proposed that "managements must standardize before they can improve. Yet, these standards should not be forced down from above, but rather set by production workers themselves". As a result, organizations need to focus more on the capabilities of the employees and avoid wasting their innovative skills.

These skills or capabilities are considered as the soft side of quality where Bedi (2006) measured the quality of service by soft and hard dimensions. Hard measures are quantifiable and objective, while soft measures are more related to the way customers perceive the product or service. It is mainly based on the personnel behaviour, interaction and attitudes among staff themselves and with customers as well. In the same context, Harvey, Skelcher, Spencer, Jas, and Walshe (2010) claims that lean production serves also as a foundation for innovation throughout the organization. It is reported that employee's skills can be developed through empowerment and cross-functional team working. Lean production was developed by the Japanese engineers through applying TQM concepts of Deming, Juran, Crosby and other TQM gurus (Landsbergis, Cahill, & Schnall, 1999). The concept of lean had its early development as the Toyota Production System (TPS) at Toyota Motor Co. However, it is not just a set of techniques that is exclusively applicable to a manufacturing environment, but it is also applicable to non-manufacturing areas. According to Bowen and Youngdahl (1998), lean techniques which are applied to the sector of services are defined as lean practices. As for healthcare organizations, two fundamental principles of TPS are particularly applicable to healthcare services; mainly to ensure quality at each step and to keep improvement processes as simple as it could be in order to make it practical, reproducible and teachable (Jimmerson, 2010).

Therefore, lean practices are the philosophy that integrates staff empowerment to recognize and reduce Muda- a Japanese expression for waste and stop the production procedure once the problem occurs (Anderson et al., 2007)This process necessitates a teamwork effort which is supported by team innovation (Lovelace et al., 2001). The aim of this study is to emphasize the mediating effect of soft TQM between the lean practices and the innovation skills of employees at healthcare organizations. For this purpose, soft TQM, lean practices and innovation principles are demonstrated.

Literature Review

Innovation Skills

Through the literature, there is a great emphasis on the innovation performance at the organizational level (Li, Wang, Chen, & Huang, 2009) but there is lack of definitions related to innovation skills at the individual level. Moreover, the focus is more on the innovation capabilities rather than skills(Blommerde & Lynch, 2014; Lema, Quadros, & Schmitz, 2015). In the absence of a definitive list of generic innovative skills, there are many reports and studies which aim to identify those fundamental skills. According to the scholar, innovative skills include "management and leadership abilities, technical, scientific and production abilities, soft and interpersonal abilities, problem-solving, language, relationship-building and communication skills, etc". In addition, innovation skills enable individuals to unleash the imagination, energy and talent that are fundamental to innovation (Chell & Athayde, 2009). Mainly, three overlapping sets of innovation skills are often considered in literature (Hoidn & Kärkkäinen, 2014). The first set includes technical skills in terms of knowledge and methods. The second set includes thinking and creativity skills such as curiosity, critical thinking, problem solving and making connections. Innovation often consists of connecting seemingly unrelated ideas from different disciplines and requires open-mindedness and critical questioning of well-established ideas or practices. Third set includes social and behavioural skills such as interest, engagement, self-directed learning, self-confidence, organization, communication, (cross-cultural) collaboration, teamwork and leadership.

Innovation skills are essential to drive innovation through a process of questioning, exploitation, experimenting, learning and adapting of new ideas. Rowley et al. (2011) reviewed the literature from year 1960 to 2007 and came out with an innovation type mapping tool. It revealed four types of innovation including product, process, position and paradigm innovation. The early innovation models were based on three fundamental types mainly; product, process and organizational innovation. However, there is also a focus on the people innovation which is related to changes in personnel, job roles, cultures and behaviours within an organization. In addition, management innovation got a great interest of researchers because of the implementation of new systems such as TQM and quality circles to enhance the innovation outcomes (Rowley et al., 2011).

Hence, innovation skills are some combinations of nature, education, training and experience that employees accumulate during their career life. It is a set of skills that can be developed and utilized in the daily operations. Innovation can take many forms based on the extent of change and newness. It can be disruptive, transformative, radical, breakthrough, or incremental. The most common form is the radical innovation which is a fundamental change to the product or process while incremental innovation is an addon to a previous innovation without changing its essential concept (Kim, Lui, & Bradley, 2015; Rowley et al., 2011).Thus, such skills are needed to support the development and diffusion of the

innovation process. Usually, any type of innovation is driven by internal driver such as new processes that rely on available knowledge and resources, while market opportunity or imposed regulations can act as external drivers of innovation.

It is essential to study the relationship between the intellectual capital and innovation, where they interact in creating and adding value to the organization and customer as well. Such a process requires a set of metrics related to innovation drivers such as leadership, culture and people participation(Hafeez et al., 2018). The outcomes of the innovation practices are mainly based on embodying where each employee achieves a level of a skill at each practice that makes it automatic, habitual and effective even in a chaotic situation. This emphasizes the importance of soft skills within an organizational performance, where each employee is considered as a venture to be an innovator. Some might claim that innovation is already in a person's DNA while others will stress the need for permanent training and improvement (Denning & Dunham, 2010).

Innovators themselves need to have excellent communication skills but often are best at listening. The skill of listening involves openness, respect for differences and reflexivity. Since a permissive and supporting workplace promotes this kind of behaviour, the first step the senior management should apply is creating this culture of innovation by insuring employees a free atmosphere with the necessary resources and tools. Employees must feel comfortable in their environment and have a good relationship with their fellow staff. Moreover, sufficient assets must be available to help them set some ideas into action and they should not be anxious to ask questions. So far, many innovations fail to meet the organizational goals. Some of the causes are internal such as the poorness of leadership, communication, empowerment and participation in teams. Also, failure can be caused by external factors such as mismatch between innovators and customer perspectives, imitation of ideas, competitiveness and governmental regulations. In order to successfully innovate, the hospital sector requires greater supporting mechanisms including a consistent policy and funding framework, greater ability to harness the power of information and development of innovation skills (Dwyer & Leggat, 2002). The reality confirms that the hospital is an organization of complex structure, where the adoption of new technologies promotes hospitals to innovate (Prajogo & Sohal, 2006). However, the nature of innovativeness and its correlation with the employees skills is still not clear enough (Salge & Vera, 2009).

Lean practices

Progressively, healthcare organizations are adopting new methods for the productivity improvement derived from other industrial sectors to help cut costs, eliminate wastes and improve patient services. One of these transferred methodologies is the lean production system (LPS). Mainly, the concept of LPS is to eliminate wastes, thus to ensure most

advantageous utilization of existing resources at the organization (Jekiel, 2011). Thus, it is considered as a collection of waste reduction tools (Pettersen, 2009).

The concept of lean production was first sprouted by Taiichi Ohno, as the Toyota Production System (TPS) just after the end of World War II in the 1950's (Burns & Grove, 2010). Then it was termed as lean by John Krafcik (Dibia & Onuh, 2010)and it was coined by Womack, Womack, Jones, and Roos (1990) in their book "The Machine that Changed the World: The Story of Lean Production". When reviewing literature of lean production, researchers can find different terms related to this concept. According to Researcher, lean thinking is the generic name intended for the operational strategy, while lean manufacturing is applying this strategy in a manufacturing capacity. Recent lean concepts outline an ordinary language to obtain continuous improvement across the organizations. Lean is "a set of operating philosophies and methods designed to improve production quality and efficiency". Moreover, it increases the competitive position of the organization in order to improve overall customer value. Keeping it simple, lean is a way to do more with fewer resources (Tracey & Flinchbaugh, 2006).

The theoretical research on lean practices is still in the first stages of development and it is not clarified yet what waste must be eliminated and how lean practices can be adapted to services. Most organizations that attempt to implement lean gets it wrong. Their concern is mainly about the financial bottom line rather than reducing the real waste efficiently (Jekiel, 2011). Hence, it is more essential to prevent the production line in the incident of a problem (Anderson et al., 2007), and find the root causes of these non value adding activities. Figure 2.2 shows the original seven wastes defined by Taiichi Ohno and cited by Author. However many researchers (Bicheno & Holweg, 2009) redefined these wastes as it is explained later to better fit new service sector; mainly healthcare organizations.

Moreover, scholars define the eighth waste of lean as the waste of human potential, where there is underutilization of the employee's skills. Hence, in a lean environment, best practices can be shared and spread through standardization, and better solutions can be implemented using diverse and cross-functional teams, allowing a broad participation of all employees overall the organization.

Soft Total Quality Management

From a general perspective, total quality management (TQM) is "an integrated system of continuous quality improvement aimed at meeting customer expectations" (Adinolfi, 2003). TQM is a system of management based on the principle that every member of staff must be committed to maintaining high standards of work in every aspect of a company's operations. This philosophy was founded since the mid 1980s by a group of experts such as Deming,

Juran, Crosby and Ishikawa, etc (Nagarakanti et al., 2011). There are many studies that have considered TQM as an improvement strategy for increasing productivity, and competiveness in different types of organizations, including both industrial and service sectors(Abrunhosa & Sa, 2008; Aulakh et al., 2006; Moskowitz, Ooi, & Pedersen, 2012).

The core concepts of TQM are classified into two extensive categories or dimensions namely soft TQM and hard TQM. Lot of studies focused on the technical side which reflects the quality control tools and statistical methods for measuring and improving procedures and operations (Black & Revere, 2006; Prajogo & Sohal, 2006; Rahman & Sohal, 2002). However, recent studies are concentrating more on the soft side. It is noted that soft skills have a dominant affect on service organizations, unlike the manufacturing sector where the emphasis is on the hard side including superiority in product, process and technology. Soft TQM focuses on human resource management which is based on the leadership, teamwork, training and employee involvement principles (Berk et al., 2006). Bounds (1994) stressed on the idea that TQM begins with people and mainly managers. One of the leaders in TQM philosophy, Kaoru Ishikawa had created a Japanese version of TQM which studied the benefits of broad employee's participation, permitting bottom up as well as top-down involvement. He created quality cycles which use employee's teams to break down the barriers among departments, and it mainly consists of four elements: members, leaders, co-coordinators or facilitators, and management.

In 1986, Masaaki Imai introduced a developed managerial philosophy called Kaizen (Aruna, Grips, & Rajam, 2009). It is founded on five elements namely teamwork, discipline, improved morale, quality circles and suggestions for improvement. Thus, it is noticed that emphasis has been placed on the need for high-performance work organization (HPWO) where employees can participate in decision making and improvements. Empirical studies verified that organizations implementing TQM have touched its advantages in terms of quality and financial performance (Prajogo & Sohal, 2006). Healthcare is considered as one of the fastest growing industries in the service sector. Quality of healthcare services is not only a concern of patients, but also it become the issue of regulators, governments, professionals and hospital managements as well, in which it is essential for the accreditation procedure (Alolayyan, Mohd Ali, Idris, & Ibrehem, 2011). Increasingly since 1970s, accreditation is being used by the government regulators as a tool to guarantee the quality of healthcare services. Thus, healthcare organizations are assessed based on a set of pre-determined standards (El-Jardali, Jamal, Dimassi, Ammar, & Tchaghchaghian, 2008; Greenfield, 2013). Generally, hospitals afford same healthcare service but not with the same quality. This is due to the presence of many barriers, particularly when healthcare organizations utilize only a partial implementation of TQM(Dilber, Bayyurt, Zaim, & Tarim, 2005).

Relationship between Lean practices and TQM

Previously, TQM has been used for improvement in healthcare, where every individual is responsible for improving the quality of goods and services supplied. But it has basically failed to improve overall cost and quality in healthcare. It was not implemented widely or continuously throughout organizations and most healthcare employees were not involved or simply, they did not understand it. On other hand, scholar states that much of the discussions about lean thinking in academic literature are still centred around applying the model on the shop floor, although human resource management (HRM) and employee empowerment in lean implantation are considered as the key success factor as the focus is on teamwork. Besides, soft TQM shares the same principles through the practices of people-based management. Based on the literature we have drawn the following hypothesis

H1: Soft TQM practices has significant impact on the lean practices

H1a: Process management has significant impact on the lean practices.
H1b: Leadership has significant impact on the lean practices.
H1c: Customer focus has significant impact on the lean practices.
H1d: Information and analysis has significant impact on the lean practices.
H1e: Strategic policy has significant impact on the lean practices.
H1f: People management has significant impact on the lean practices.

Relationship between Lean practices Soft TQM and Innovation Skills

Most of the studies emphasize that in terms of operations and improvements, the service industries are a long way behind manufacturing especially for healthcare services (Buggy & Nelson, 2005; Mahmood et al., 2016). Lot of healthcare organizations are facing improvement and development problems such as the increase of healthcare costs, recurring medical errors and the increased efforts to improve efficiency and quality of the healthcare services. Hence, implementing lean principles is claimed to be essential for solving such problems and providing a space for innovation (Hoerl & Gardner, 2010; Petkovic et al., 2011). The existing literature indicates that the interest in practicing lean healthcare is growing significantly from 2002 to 2008 where most applications have occurred in the United States of America and public healthcare sector of United Kingdom. This reflects the fact that lean healthcare is becoming a successful approach for improvement in the health sector. (Buggy & Nelson, 2005) applied a case study of lean processes and production methods to Park Nicollet Health Services; a non-profit, integrated care system located in suburban Minneapolis, Minnesota which has recently undertaken a major initiative to implement lean production practices. The study focused on the implications of different lean

principles including the concept of error-proofing which prevents defects at the source, rapid process improvement workshop (RPIW) and the 3P methods that are based on production, preparation, and process improvements. In addition, the 5S method are claimed to be utilized alone or in conjunction with other improvement events to maintain standardized work practices.

H2: Innovation is in significant relationship with lean practices

According to researcher, TQM is considered as an improvement tool that supports the implementation of lean production. It is suggested that the ability of organization to deliver sustainable competitive advantage increases when resources are managed appropriately by implementing the lean production principles. These resources include financial, human, physical, commercial and technological assets and they are claimed to have a positive effect on the outcome of the innovation process (Kostopoulos, Spanos, & Prastacos, 2002). Generally, many researchers found that TQM has a positive impact on innovation capabilities (Moskowitz et al., 2012; Prajogo & Sohal, 2004; Raphael, 2010). While some considered TQM practices as a tool to develop the innovation skills of employees at organizations. It is claimed that organizations cannot be successful with innovation if it cannot produce products that meet acceptable quality standards. Thus, TQM is a good way for improving quality, standardizing the work, and enhancing a culture of innovation. Conceptually, Raphael (2010)reviewed 19 articles that were published within 2001-2010 related to TQM and innovation practices. The study revealed that researchers do not consistently measure the same variables causing difficulties to compare results between studies. However, the review of literature illustrated that the two concepts of TQM and innovation share lot of key dimensions such as human management, continuous improvement, training and education, management commitment, communication and customer orientation which are more related to the soft side of TQM. Adler et al. (2003) states that performance improvement capability of any organization includes all the resources and processes supporting both the generation and the diffusion of appropriate innovations in which the recent concern is more with continuous quality improvement and the focus shifts to continuously upgrading the employee's knowledge and skills. For instance, adoption of TQM as an innovative management practice within Veterans Health Administration (VHA) in the United States was studied by author. A survey included 171 hospitals was conducted and the findings showed that for VHA hospitals, TQM represents an innovative philosophy and a set of practices for improving the quality of health care services. This includes commitment to quality improvement through continuous examination of processes and empowering employees to identify opportunities that can improve quality through training programs.

H3: Innovation moderates the relationship between soft TQM practices and Lean practices.

H3a: Innovation moderates the relationship between process management the lean practices.

H3b: Innovation moderates the relationship between leadership the lean practices.

H3c: Innovation moderates the relationship between customer focus the lean practices.

H3d: Innovation moderates the relationship between **i**nformation and analysis the lean practices.

H3e: Innovation moderates the relationship between strategic policy the lean practices.

H3f: Innovation moderates the relationship between people management the lean practices.

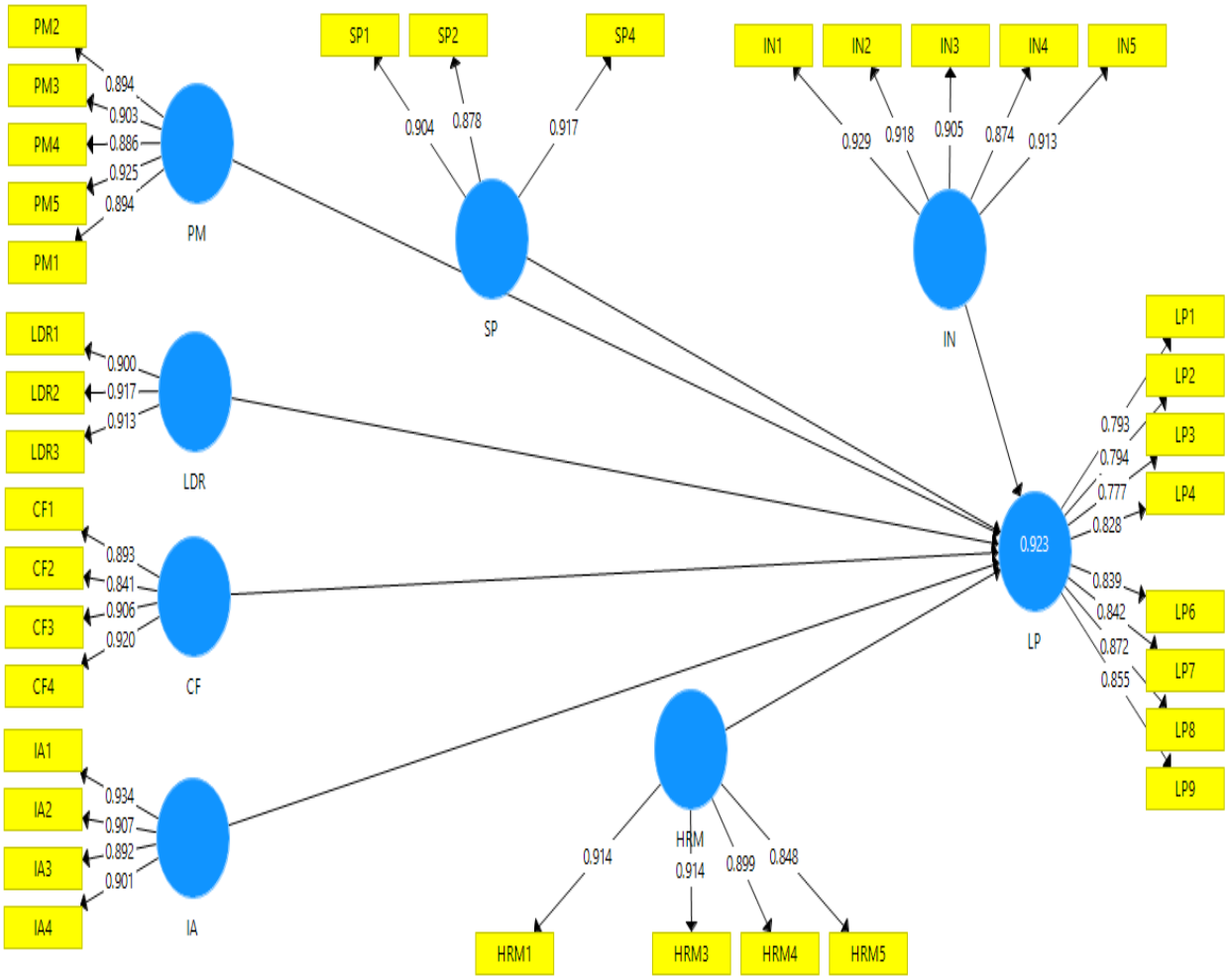
Methodology

This research study is based on analyzing the relation among the variables … For research analysis; quantitative research approach has been adopted. The method of collecting information is questionnaire survey. The use of questionnaire survey allows incorporating large sample size and a detailed analysis of the responses collected. The instrument for data collection is questionnaire survey. The survey responses are quantified. The relation among the dependent, independent and intervening variables is determined through questionnaire analysis. The questionnaire has been structured considering the research objectives, problem and hypothesis developed. The respondents were given Likert scale for answering the questions. Literature review was considered in the development of questionnaire survey. The relative importance of the variables in influences the employee performance within the Indonesian manufacturing sector has been assessed. The information collected through questionnaires is then added to the statistical software. The software used for analysis includes SPSS, IBM, MS Excel and Smart-PLS. In a study conducted by it has been suggested that goodness of fit is not a suitable indicator of measuring validity of the model. According to the researcher, when goodness of fit is used with PLS path models, it does not give good estimate for model validity since the valid and invalid models cannot be differentiated. A two-step mechanism has been discovered due to progress in the PLS path modelling and unsuitability of model validity. These steps are used to determine the results of PLS-SEM path. The first step is the assessment of measurement model and the second step is the assessment of structure model. The allocation of measures to the unobserved variables is identified through the measurement model. However, the structural model involves the association among the dependent and explanatory unobserved constructs. The researcher can determine, explain and forecast the extent of association among the latent variables. The reliability of individual content is determined in the assessment of measurement model. Moreover, the convergent and discriminant validity are required as well

Results

For testing the relation among the variables, the Smart PLS Structural Equation Modelling (SEM) is has been used. It has been recognized as a second-generation approach. The approach is considered superior to multiple regressions due to its increased abilities. In multiple regressions, one dependent variable can be used at a time. However, PLS-SEM can use various dependent variables simultaneously. Therefore, the approach allows the incorporation of various dependent variables at a time. The approach is extensively used by the researchers of behavioural sciences, it has the ability to include unobserved (latent) variables in the model analysis. It can perform analytic modelling with the variables. The variables, which cannot be observed directly, are called latent variables. These variables are estimated by other measures as claimed by researcher. In the present research study, all the variables are latent constructs that have been measured through their indicators. The SEM approach involves the use of inner model and an outer model.

Figure 1. Measurement Model



By analyzing the outer loadings of every measure of variable, the reliability of individual item was measured. The items having the loadings value between 0.40-0.70 are not eliminated. The items having value out of this range are eliminated from the model. In this research study, 3 items were eliminated out of 61 as they had loadings below the standard value. The items are omitted because of multicollinearity. When there is high similarity among the items, they are less likely to measure a construct. When most of the items become similar, the acceptable item set consists of one or two items. It is sufficient to use one or two indicators. When the model is required to be estimated at best, each latent should have two measured indicators. When a complex model is estimated, degrees of freedom are increased.

Table 1: Outer loadings

	CF	HRM	IA	IN	LDR	LP	PM	SP
CF1	0.893							
CF2	0.841							
CF3	0.906							
CF4	0.920							
HRM1		0.914						
HRM3		0.914						
HRM4		0.899						
HRM5		0.848						
IA1			0.934					
IA2			0.907					
IA3			0.892					
IA4			0.901					
IN1				0.929				
IN2				0.918				
IN3				0.905				
IN4				0.874				
IN5				0.913				
LDR1					0.900			
LDR2					0.917			
LDR3					0.913			
LP1						0.793		
LP2						0.794		
LP3						0.777		
LP4						0.828		

LP6						**0.839**		
LP7						**0.842**		
LP8						**0.872**		
LP9						**0.855**		
PM2							**0.894**	
PM3							**0.903**	
PM4							**0.886**	
PM5							**0.925**	
SP1								**0.904**
SP2								**0.878**
SP4								**0.917**
PM1							**0.894**	

According to the author, validity of single item measures is similar to multiple item measures. The results demonstrate similar empirical and theoretical findings. Some examples of the constructs, which are measurable through indicators of single item, are provided by the researcher and this clears the debate related to use of single item indicator. The degree of correlation among the latent constructs is referred as convergent validity. By determining the AVE of each construct, convergent validity was analysed. The suggestion has been used in this research study. In order to achieve convergent validity in sufficiently, the value of AVE of each construct must be equal or greater than 0.50. High loadings are revealed when the value is greater than 0.50 as the AVE values came to be 0.567 and 0.8771 as presented in the table. This indicates that the convergent validity is established in the model. Discriminant validity is regarded as the degree to which the latent construct differs from other unobserved constructs. Using the AVE (Average Variance Extracted) in this research study, discriminant validity was measured. The value of correlation among the unobserved constructs was compared with the square value of AVE. Discriminant validity was estimated based on the suggestion of researcher. The value of AVE to be acceptable is 0.50. The value of AVE square needs to be greater than the correlation among the unobserved constructs for sufficient discriminant validity. The table 2 presents the AVE values. The values reflect that they lie between 0.56 and 0.87, which means they are acceptable.

Table 2: Reliability Analysis

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
CF	**0.913**	**0.915**	**0.939**	**0.793**
HRM	**0.916**	**0.922**	**0.941**	**0.799**
IA	**0.929**	**0.930**	**0.950**	**0.825**
IN	**0.947**	**0.948**	**0.959**	**0.825**
LDR	**0.897**	**0.901**	**0.935**	**0.828**
LP	**0.933**	**0.934**	**0.945**	**0.682**
PM	**0.942**	**0.943**	**0.955**	**0.811**
SP	**0.883**	**0.886**	**0.927**	**0.810**

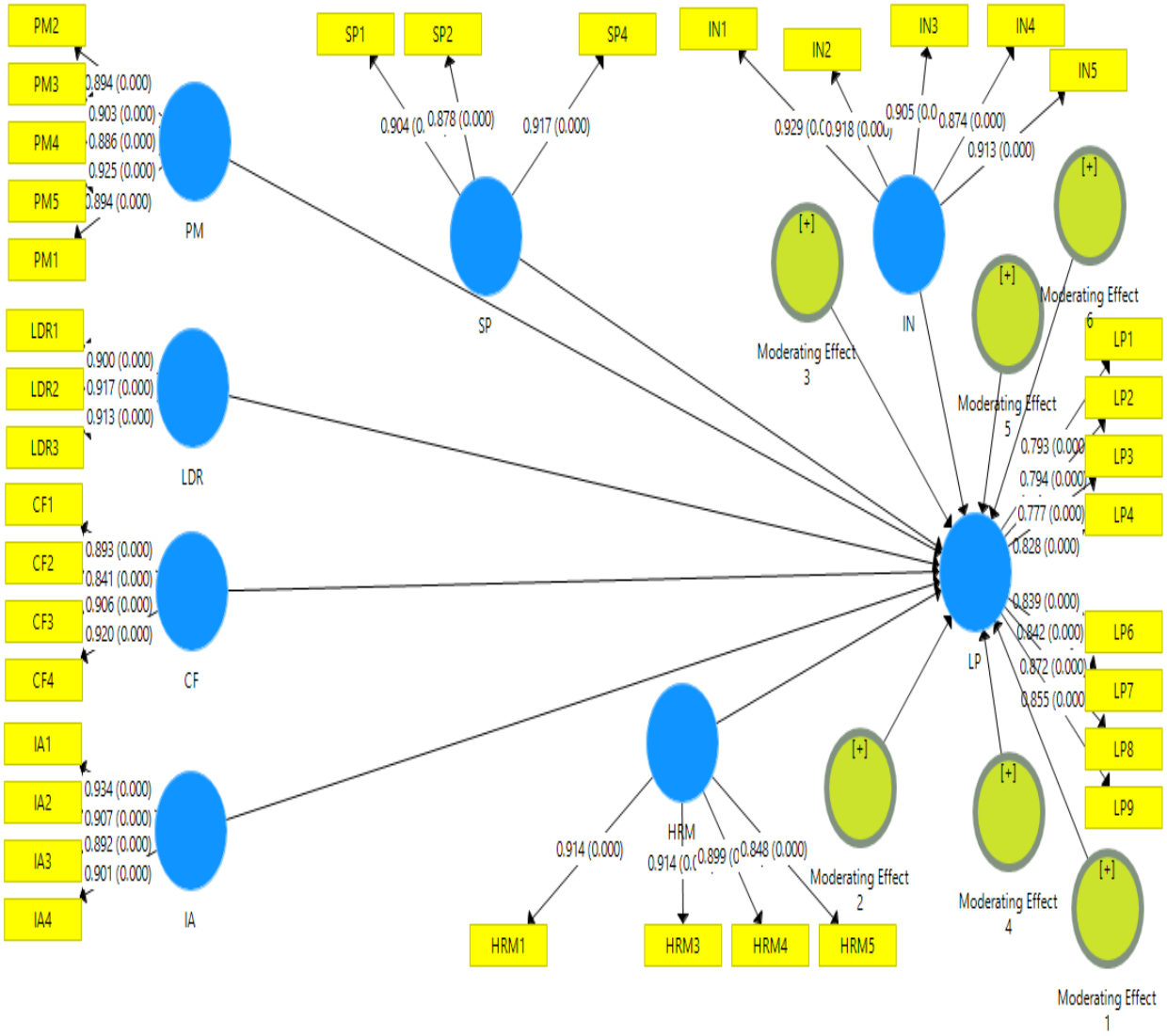
Table 3: Discriminant Validity

	CF	HRM	IA	IN	LDR	LP	PM	SP
CF	0.890							
HRM	0.701	0.894						
IA	0.688	0.871	0.908					
IN	0.703	0.697	0.675	0.908				
LDR	0.876	0.654	0.637	0.704	0.910			
LP	0.734	0.803	0.787	0.926	0.677	0.826		
PM	0.896	0.665	0.684	0.668	0.890	0.684	0.901	
SP	0.714	0.888	0.912	0.702	0.639	0.822	0.662	0.900

After the estimation of measurement model, the structural model is estimated in the next step. For the determination of structural model, bootstrapping technique was adopted. The next stage is the assessment of the structural model after ascertaining the measurement model in the present study. 5000 bootstrap samples were used in this research with 320 number of sample size. The path coefficient significance was identified and 320-sample size to assess the significance of the path coefficients was applied. It is illustrated by scholar that the structural model is based on the relationships in the hypothesized model.

Figure

Figure 2. Structural Model



The path coefficient values and t-values are used in the structural model used by partial least squares (PLS). The PLS approach is similar to Standardized Beta coefficient of regression regarding the path coefficient. The evaluation model, hypothesis assessment and correlation among the variables have been identified in this research study. PLS-SEM approach adds to Parsimonious model in the structuring of hypothesis. The models provide the least possible number of parameters for given quality of the results for the estimated model. Different layers of constructs are included in the Hierarchical component model (HCM) that is second order structure. It includes a high abstraction level. A more précised higher order component is included in HCMs, which is linked with components of lower order (one or two). The link can be in a formative or reflective way. In PLS-SEM, several reasons exist behind the inclusion of Hierarchical component model. This supports in the reduction of relations involved in the structural model. PLS path model becomes parsimonious with the reduction

of relations and easy to use. When there is high correlation among the constructs, HCMs is considered impressive. Multi-collinearity issues can result in biased results of the estimated relationships among the variables. A second-order construct can reduce the issue of multi-collinearity and resolve the issue of discriminant validity.

Table 3: Direct relationships

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
CF -> LP	0.105	0.106	0.066	3.603	**0.000**
HRM -> LP	0.103	0.104	0.065	4.600	**0.000**
IA -> LP	0.072	0.065	0.057	3.258	**0.000**
IN -> LP	0.695	0.691	0.036	4.207	**0.000**
LDR -> LP	-0.161	0.153	0.059	3.740	**0.006**
PM -> LP	0.044	0.047	0.063	3.699	**0.000**
SP -> LP	0.183	0.180	0.066	3.785	**0.005**

Table 5: Indirect relationship (Moderation)

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Moderating Effect 1 -> LP	0.069	0.081	0.081	3.849	**0.000**
Moderating Effect 2 -> LP	0.005	0.009	0.063	3.073	**0.000**
Moderating Effect 3 -> LP	0.024	0.027	0.072	3.328	**0.000**
Moderating Effect 4 -> LP	0.076	0.086	0.071	4.066	**0.000**
Moderating Effect 5 -> LP	0.014	0.015	0.071	3.196	**0.006**
Moderating Effect 6 -> LP	0.002	0.001	0.070	3.033	**0.000**

For determining the PLS-SEM mode, another criterion is R-squared. R2 is also known as coefficient of determination. According to scholar, the variation in the independent variable caused by one or more predicting variables is referred as R2 value. The minimum acceptance value of R2 is considered to be 0.10. According to researcher the value of R2 to be 0.19 is considered weak, 0.33 as moderate and 0.67 to be substantial while using PLS-SEM

approach. The R-squared values for the endogenous latent variables have been presented in the table 6.

Table 6: R-Square

	R Square
LP	0.923

Conclsuion

The theoretical research on lean practices is still in the first stages of development and it is not clarified yet what waste must be eliminated and how lean practices can be adapted to services. Most organizations that attempt to implement 'lean' get it wrong. Their concern is mainly about the financial bottom line rather than reducing the real waste efficiently. The concept of TQM practices and innovation has become a major component of competitiveness from a variety of discipline. The core concepts of TQM are classified into two extensive categories or dimensions namely soft TQM and hard TQM. A lot of studies focused on the technical side which reflects the quality control tools and statistical methods for measuring and improving procedures and operations. The current study has focused on the soft TQM.

The prime objective of the current study is to investigate the impact of soft total quality management practices namely process management, leadership, customer focus, information and analysis, strategic planning and people management on the lean practices. In addition to that the moderating role of innovation in the relationship between a variety of discipline. To achieve the objective of the study we have used the structural equation modelling approach using SEM-PLS. Data of 320 firms was collected through an adopted questionnaire designed on a five-point Likert scale. The results reveal positive and significant effects of TQMP on the lean practices. Additionally, business innovation appeared as a significant moderator. The study will be helpful for researchers, practitioners, managers and policy makers in deciding actions around TQM practices, business innovation, and lean practices. A gap appears to be in the knowledge about the procedures by which hospitals can generally enhance the performance of their employees especially at the level of skills. The aim of this study is to cover more concepts, methods and lean tools that can be used to improve the innovation skills of healthcare providers.

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