Examining Top Management Commitment to TQM Diffusion using Institutional and Upper Echelon Theories

Rameshwar Dubey
Montpellier Business School
Montpellier Research in Management
2300 Avenue des Moulins
34000 Montpellier France
E-mail: rameshwardubey@gmail.com

Angappa Gunasekaran
School of Business and Public Administration
California State University, Bakersfield
9001 Stockdale Highway
Bakersfield, CA 93311-1022
USA
Tel: (661) 664-2184
Fax: (661) 664-2207
E-mail: agunasekaran@csub.edu

Stephen J. Childe
Plymouth Business School
Plymouth University
Plymouth, PL4 8AA
United Kingdom
E-mail: stephen.childe@plymouth.ac.uk

Thanos Papadopoulos
Kent Business School
University of Kent
Sail and Colour Loft, The Historic Dockyard
Chatham, Kent ME4 4TE
United Kingdom
E-mail: A.Papadopoulos@kent.ac.uk

Benjamin Hazen
Department of Operational Sciences
Air Force Institute of Technology, USA
E-mail:benjamin.hazen@live.com

David Roubaud
Montpellier Business School
Montpellier Research in Management
2300 Avenue des Moulins
34000 Montpellier France
E-mail: d.roubaud@montpellier-bs.com

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Abstract

Total Quality Management (TQM) is an enduring approach for enhancing firm competitiveness. Still, there is dearth of research regarding organisational diffusion (post-adoption) of TQM. To address this gap, this research proposes a theoretical model rooted in institutional and upper echelon theories that explains TQM diffusion via top management commitment. We surveyed 300 senior quality managers representing 300 auto-components manufacturers in India to collect data to test the proposed model using variance based structural equation modelling (PLS-SEM). The findings suggest that institutional pressures significantly influence top management commitment to TQM. Subsequently, top management commitment influences organisational diffusion of TQM via acceptance, routinization, and assimilation. Managers can use the findings of this research to better understand how to assimilate TQM so that anticipated benefits can be fully realized.

Keywords: Total Quality Management, Acceptance, Routinization, Assimilation, Institutional Theory, Upper Echelon Theory, Survey Methods, Factor Analysis

1. Introduction

The term "Total Quality Management" (TQM) denotes a set of tools, techniques, and procedures that are used to reduce or eliminate variation from a production process or service-delivery system (Ebrahimi and Sadeghi, 2013; Akgün et al. 2014; Cho et al. 2017). Organizations adopt TQM in hopes of improving efficiency, reliability, and quality (Steingard and Fitzgibbons, 1993; Waldman, 1994; Rahman, 2004; Lee et al. 2012) as well as in support of performance and productivity goals (Iyer et al., 2013; Wruck and Jensen, 1994; Besterfield, 1995). TQM represents an overarching corporate focus toward meeting customer expectations and reducing costs resulting from poor quality by integrating quality management systems and processes with corporate culture (Berry, 1991; Handfield et al. 1999; Yusof and Aspinwall, 2000). Although there are numerous TQM success stories (Mohanty and Lakhe, 1998; Taylor and Wright, 2003; Jayaram et al. 2010; Zatzick et al. 2012; Hietschold et al. 2014; Ng et al. 2014; Valmohammadi and Roshanzamir, 2015; Donauer et al. 2015), there are some sceptics

who continuously question the role and impact of TQM (Corredor and Goni, 2011; García - Bernal and García-Casarejos, 2016). Indeed, failures of TQM implementation have been widely reported (see, Powell, 1995; Beer, 2003; Jun et al. 2004), and are largely attributed to inconsistent operationalization of TQM across different contexts (see, Spencer, 1994; Sousa and Voss, 2002; Bou-Llusar et al. 2009), non-participative assumptions (Korunka et al. 2003; Ng et al. 2015), and a failure to consider soft dimensions of TQM use and diffusion (Calvo-Mora et al. 2013, 2015; Dubey and Gunasekaran, 2015; Zeng et al. 2015). Fried (1995) further argues that the existing TQM literature has failed to discuss the inhibitive role of the legal environment on TQM adoption. Furthermore, King (1995) noted that resistance to change often leads to failure of TQM implementation. In a later study, Jones and Seraphim (2008) further argue that the literature on TQM implementation in an unfavourable environment is scant. Hence, we may argue that despite of rich body of TQM literature, studies explaining the diffusion (post-adoption) of TQM are very hard to find with the notable exceptions of Ahire and Ravichandran (2001); and Osayawe Ehigie and McAndrew (2005). This is unfortunate, as literature suggests that adoption and installation of any innovation are only initial steps toward organisational diffusion, and that full performance expectations cannot be realized until innovations are assimilated to some degree (Ahire and Ravichandran, 2001; Hung, 2007; Kiatcharoenpol et al. 2010; Hazen et al., 2012; 2014). In fact writers have used interchangeable terms to describe the processes in play; for example, Porter et al (2001) examine assimilation and define it following Tornatzky and Klein (1982); Cooper and Zmud (1990) and Fichman and Kemerer (1997) in terms of diffusion and adoption. Ahire and Ravichandran (2001) proposed stages of adoption, adaptation, acceptance, and use, based on Kwon & Zmud's (1987) 5-stage model of implementation beginning with initiation and adoption stages.

Our study addresses the gaps noted in previous studies (see, Ahire and Ravichandran, 2001; Hung, 2007; Kennedy and Fiss, 2009; Zeng et al. 2015). We suggest that a firm's top management (internal human agents) (Hambrick, 2007) play a significant role in the diffusion of TQM via motivating three stages of post-adoption diffusion: acceptance (ACP), routinization (RO) and assimilation (ASM) which we derived from Hazen et al (2012). We point out that the definition of Adaptation by Ahire & Ravichandran (2001), including the willingness of employees to participate, is similar to what Hazen et al (2012) term Acceptance (ACP) as used in this study. The term Acceptance as used by Ahire and Ravichandran to denote the extent of teamwork, supplier involvement, etc., corresponds more closely to what we term Routinisation (RO). Our third measure, Assimilation, relates to the extent of TQM use and corresponds somewhat to Ahire and Ravichandran's Use measure. We submit that external

institutional forces play an important role with respect to the acceptance, routinization and assimilation phases of TQM diffusion and this remains largely unexplored.

We draw on Institutional Theory (DiMaggio and Powell, 1983; Westphal et al. 1997; Liang et al. 2007; Nair and Prajogo, 2009; Kauppi, 2013) and Upper Echelon Theory (Hambrick and Mason, 1984; Hambrick, 2007) to inform this research. Institutional theory is used to discuss innovation adoption and diffusion (Kennedy and Fiss, 2009); for instance, Sila's (2007) research sought to explain TQM and its impact on performance using three institutional factors and two contingency factors. We chose institutional theory because it describes how organisations shape themselves to gain legitimacy from important stakeholders (Sila, 2007, p.92). This is due in part to regulations, procedures, and structures imposed on organisations by the regulatory bodies (DiMaggio and Powell, 1983).

However, previous studies do not consider how organisations are seeking to adopt and diffuse TQM in response to external pressures. Furthermore, institutional theory focuses on homogeneity and persistence, and not on the role of interest and agency in shaping action. To address this limitation, the role of intra-organisational dynamics needs to be included (Greenwood and Hinings, 1996); in this case, upper echelon theory can be useful.

Upper echelon theory suggests that executives' experiences, values and personalities greatly influence their interpretations of the situations they face and, in turn, affect their choices (Hambrick, 2007). As will be described in Section 2, by combining institutional theory and upper echelon theory, this paper extends the findings of Westphal et al., 1997; Ahire and Ravichandran, 2001; Sila, 2007; and Kennedy and Fiss, 2009). We argue that top management commitment plays an intervening role with respect to how institutional pressures affect TQM diffusion in an organisation.

We address the following research question: how do institutional factors affect top management commitment to TQM diffusion across their organisation? Examining this question yields two primary contributions. First, this research provides unique insights into post-adoption TQM diffusion via organisational theories (i.e. institutional theory and upper echelon theory). We suggest that increased levels of diffusion may be a function of a firm's desire to appear legitimate to powerful constituents, peer organisations, or stakeholders outside the organisation (Abrahamson, 1991, 1993; DiMaggio & Powell, 1983; Kennedy and Fiss, 2009). Second, we examine top management commitment as a potentially important mediator of the relationship between institutional pressures and diffusion of TQM. The integration of these theories and literature streams contributes to building theory with respect to the diffusion of management innovations such as TQM.

The remainder of the article is organized as follows. In the next section, we provide a brief background of the literature on TQM. Then, the theoretical framework and research hypotheses are developed and presented. Subsequent sections describe the constructs and their operationalization, outline the data collection and analysis methods, and present the findings. We then discuss the theoretical and managerial implications of our findings, and end with limitations and future research directions.

2. Organizational theories and total quality management research

Literature suggests that organisational theories offer a holistic understanding of the diffusion of innovations (Damanpour, 1987; Sila, 2007). Organisational factors including functional differentiation, specialisation, administrative intensity, organisational size, organisational slack, and others are shown to affect adoption of administrative innovations (Damanpour, 1987). Weber (2009) argues that organisational theories are those that address structural organisation and basic scientific fundamentals that serve to increase measures of management efficacy. Hence, if we consider TQM as an innovative means through which to improve structural and process elements within the firm, then organisational theories have the potential to inform TQM research. The use of organisational theories such as institutional theory and contingency theory may provide an explanation of the diffusion process of TQM. A list of the prominent organisational theories used in TQM research is shown in Table 1.

Table 1: Organisational theories used in TQM research

Organisational theory	**Literature**
Resource Based View (Barney, 1991; Grant, 1991)	Powell (1995); Tena et al. (2001); Ruiz-Carrillo and Fernández-Ortiz (2005); García-Bernal and García-Casarejos (2014).
Institutional theory (DiMaggio and Powell, 1983)	Westphal et al. (1997); Young et al. (2001); Ketokivi and Schroeder (2004); Sila (2007); Kennedy and Fiss (2009).
Contingency Theory (Duncan, 1972; Miller, 1992)	Silvestro (2001); Sila (2007); Jayaram et al. (2010); Zatzick et al. (2012).
Upper Echelon Theory (Hambrick and Mason, 1984)	Ahire and Ravichandran (2001); Young et al. (2001); Soltani (2005); Das et al. (2011).

The RBV asserts that an organisation can achieve competitive advantage by creating bundles of strategic resources and/or capabilities (Barney, 1991). Powell (1995) argues using RBV logic that TQM is not readily imitable. Hence, TQM may provide competitive advantage to the organisation (Kiatcharoenpol et al. 2010). However, the RBV does not necessarily consider properties of resources and resource markets to explain enduring firm heterogeneity (Oliver, 1997). Ling-Yee (2007, p.360) argues that RBV suffers from context insensitivity; it is unable to identify the conditions under which the resources or capabilities may be most effective or valuable. Contingency theory suggests that organisations must adapt depending on the environmental conditions in which they exist (Donaldson, 1999). Duncan (1972) argues that successful organisations choose structures and process characteristics that "fit" the degree of uncertainty in their environment.

To address the somewhat static nature of the RBV, many scholars have proposed contingent RBV (CRBV). The CRBV may help to evaluate the extent to which different organisational resources or capabilities provide value (Aragón -Correa and Sharma, 2003), to further enhance the value of the theory (Brush and Artz, 1999), and to identify different conditions which affect the utility of different resources or capabilities. Hence, contingencies have been identified as critical in the realisation of competitive advantage created by resources and capabilities, especially in relation to selection and deployment (Sirmon and Hitt, 2009). Contingency factors such as national context and culture, firm size, strategic context and other organisational variables have been considered within the TQM literature (Sila, 2007; Jayaram et al. 2010; Zatzick et al. 2012). However, the studies utilising RBV or CRBV for understanding innovative manufacturing practices or TQM diffusion do not typically capture the social context within which resource selections are embedded, i.e. firm traditions, network ties, or regulatory pressures (Ketokivi and Schroeder, 2004).

According to institutional theory, organisations shape themselves to increase their stakeholders' perceived legitimacy (Sila, 2007, p.92). This is due in part to regulations, procedures, and structures imposed on organisations by regulatory bodies (DiMaggio and Powell, 1983). Sila (2007) argues that organisations may be forced to change their structures due to governmental pressures, imitate the structures of other organisations because of competitive pressures, or conform to normative standards developed by accreditation bodies. Because there is no certification for TQM, there are no specific official guidelines for implementation. Therefore, organisations implementing TQM are likely to imitate early adopters to improve the quality of products or services in response to competitive pressures (Westphal, 1997; Sila, 2007). Kostova and Roth (2002) suggest that the adoption of TQM

practices by a multinational corporations' subsidiaries highlights the consideration of the broader institutional context as well as the more localized, relational context. Their study has important implications regarding alignment of practices, interests, agency and relational factors that increase levels of diffusion. For instance, organisations seek to adopt TQM in response to external pressures from stakeholders such as customers and shareholders. Hence, it is reasonable to assume that institutional pressures may influence the diffusion of TQM (Westphal et al. 1997; Dacin et al. 2002; Kostova and Roth, 2002; Kennedy and Fiss, 2009). King (1995) further argues that the TQM initiatives often fail, especially in cases where organisations are resistant to TQM change. However, Dacin et al.'s (2002) critique of institutional theory suggests that the theory generally focuses on homogeneity and persistence, with less attention to the role of interest and agency in shaping action. To address these limitations, researchers have incorporated the role of intra-organisational dynamics within the institutional theory framework (Greenwood and Hinings, 1996; Delmas and Toffel, 2008). Following this tradition, we employ not only institutional theory, but also upper echelon theory (Hambrick and Mason, 1984; Hambrick, 2007). The central premise of upper echelon theory is that executives' experiences, values and personalities greatly influence their interpretations of the situations they face and in turn, affect their choices (Hambrick, 2007). Top management support and commitment constructs have been used to increase understanding of the nomological network describing relationships between institutional factors and diffusion factors (Liang, et al., 2007). We employ the Top Management Commitment construct (TMC) as the focal variable that enhances understanding of how and why TQM might diffuse within organizations.

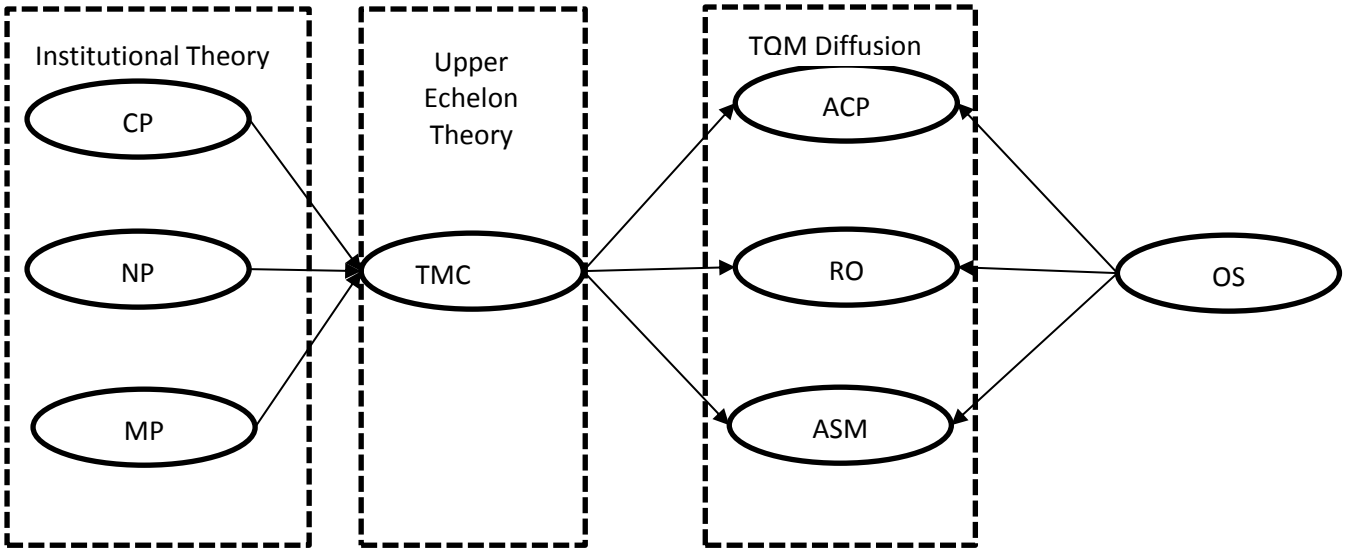
Westphal et al. (1997) observed that early adopters customize TQM practices for efficiency gains, while later adopters gain legitimacy from adopting the normative form of TQM programs. They suggest that institutional theory may offer a better understanding to explain the diffusion of a management innovation such as TQM. However, Westphal et al. (1997) do not illustrate how organisations that are engaging in TQM respond to the external pressures.

Kennedy and Fiss (2009) discuss the diffusion of innovative practices using institutional theory following Tolbert and Zucker's (1983) two-stage model. They argue that both early and later adopters are affected by need for efficiency and legitimacy, which are generally complementary constructs. Early adoption is associated with opportunity framing and motivations to achieve gains, both economic and social, while later adoption is associated with threat framing and motivations to avoid losses, again in both economic and social terms.

Their study indicates that the conventional two-stage model of innovation adoption – early adopters seeking efficiency and later adopters seeking legitimacy – fails to account for the complementarities regarding social and economic motivations for adoption. Instead, we suggest that the economic and social factors in combination may drive diffusion as it changes the motivation for adoption from a potential opportunity for early adopters to a more certain threat for later ones. These adoption motivations are related to subsequent implementation patterns. In addition, research indicates that the substantive importance of social considerations may differ less between early and later adopters than previously assumed. Prior studies (see Westphal et al. 1997; Sila, 2007; Kennedy and Fiss, 2009) have remained silent on how external pressures may influence TQM diffusion. In this research, we therefore extend previous research (Westphal et al., 1997; Sila, 2007; Kennedy and Fiss, 2009) by examining TQM diffusion using institutional theory and upper echelon theory.

3. Model and hypotheses development

The theoretical model (Figure 1) comprises two primary elements: institutional pressures (of three types) and top management commitment (TMC). Consistent with the previous studies (see, Liang et al. 2007), top management commitment is proposed as the focal variable that translates external forces (institutional pressures) into diffusion of TQM. Based on this proposition, the model proposes six research hypotheses, each of which is developed further in this section.



Note: CP = Coercive Pressure; NP = Normative Pressure; MP = Mimetic Pressure;
TMC = Top Management Commitment;
ACP = Acceptance; RO = Routinization; ASM = Assimilation;
OS = Organization Size

Figure 1: Proposed TQM Diffusion Model

3.1 Institutional Theory and Top Management Commitment

Sila's (2007) research sought to explain TQM and its impact on performance using three institutional factors and two contingency factors. Specifically, Sila (2007) used TQM implementation, ISO 9000 registration, country of origin, and the two contingency factors company size and scope of operations. Saremi et al. (2009) further underlined the role of external consultants in successful implementation of TQM. In this research, we examine how institutional pressures affect post-adoption diffusion processes. Institutional theory posits that structural and behavioural changes in the organisation are driven less by competition and the desire for efficiency, and more by the need for organisational legitimacy (DiMaggio and Powell, 1983; Liang et al. 2007; Lo et al. 2011; Kauppi, 2013; Zhao et al. 2013; Dubey et al. 2016). DiMaggio and Powell (1983) argue that the drive for legitimacy encourages organisations to embrace institutionalisation. This process of institutionalisation is termed 'institutional isomorphism' (see, DiMaggio and Powell, 1983; Liang et al. 2007; Kauppi, 2013). This literature suggests there are three mechanisms of institutional isomorphism. The first mechanism is coercive pressures, which refer to external pressures such as cultural expectations in the society, government regulations and policies, professional associations, and/or competitive necessity within the industry (Liang et al. 2007). In response to these

external pressures, organisations develop 'coercive isomorphism'. The second mechanism is normative pressures, which arise from professionalization, defined by DiMaggio and Powell (1983,p. 150) as "… the collective struggle of members of an occupation to define the conditions and methods of their work, to control the production of the future member professionals, and to establish a cognitive base and legitimisation for their occupational autonomy …" Scholars argue that a pool of almost interchangeable employees (and hence normative isomorphism) is created through formal education and professional networks (see DiMaggio and Powell, 1983; Liang et al. 2007; Kauppi, 2013). The third mechanism is mimetic pressures, which refer to how organisations mimic actions of competitor organisations. These pressures can often be attributed to environmental uncertainty. For instance, organisations might develop mimetic isomorphism to give the appearance of being on par with or even ahead of competitors, even if they are not (DiMaggio and Powell, 1983). Indeed, it follows that coercive, normative, and mimetic pressures will influence top management commitment to the diffusion of TQM. Institutional theory can offer a useful lens through which to examine TQM diffusion, and therefore provides the theoretical rationale for our first three hypotheses. Next, we provide additional literature support to further develop each of these hypotheses.

Coercive Pressures and Top Management Commitment

Coercive pressures (CP) have been shown to influence introduction of technological and managerial innovations (i.e. Hart and Saunders, 1998; Hu and Quan, 2006). For instance, Guler et al. (2002) find that CP have positive influence on the diffusion of ISO 9000 quality systems. It follows that CP might also play an important role in facilitating TQM diffusion. Literature on diffusion suggests that the role of CP can be highly contextual, and can take the form of myriad contextual factors such as those derived from relationships with suppliers, peer firms, rival firms ("trendsetters"), customers, state or local government regulatory norms, industry associations and competitive structures (see, for example Abrahamson and Rosenkopf, 1993). This factor might also have indirect impacts on diffusion via intervening variables such as organisational culture, top management commitment, and others (Abrahamson and Rosenkopf, 1993). Liang et al. (2007) argue how the mediating effects of TMC play an important role in translating CP into levels of diffusion. Hence, following similar logic we hypothesize:

H1: Higher levels of coercive pressures are related to higher levels of top management commitment.

Normative Pressures and Top Management Commitment

Normative pressure (NP) can stem from professional organizations, peer organizations, media outlets, and other channels that firms identify to benchmark business practices and outcomes (Liang et al. 2007; Nair and Prajago, 2009). To this end, Lee and Dawes (2005) argue that NP plays a significant role in ERP adoption in a developing economies context. Similarly, Dubey et al. (2016) found that NP plays a significant role in motivating sustainable consumption and production practices. It follows that the effect of NP on top management commitment and subsequent diffusion would also hold when considering practices similar in form and scope such as TQM.

Ng et al. (2015) caution that firms should neither seek to implement TQM as per any specific set of guidelines, nor seek to implement TQM half-heartedly. Instead, firms should benchmark best performers and practices, and examine normative TQM profiles when driving their own TQM implementation. Hence, it follows that NP will have significant influence on top management commitment to TQM. Thus, we hypothesize:

H2: Higher levels of normative pressures are related to higher levels of top management commitment.

Mimetic Pressures and Top Management Commitment

As with the other mechanisms of institutional theory, mimetic pressures (MP) have also been used as an antecedent to the adoption and diffusion of technological and management innovations (Liang et al., 2007; Nair and Prajago, 2009). Organisations tend to mimic other organisations that are peers or aspiring peers. For instance, Liang et al., (2007) found that MP influence top management commitment to ERP systems, which then increases levels of diffusion of ERP. Scholars (see DiMaggio and Powell, 1983; Liang et al. 2007; Kauppi, 2013; Dubey et al. 2016) note how organisations mimic other organisations within their industry with respect to how they adopt and use technological, managerial, and production-related innovations and new practices. Although there is a lack of research investigating the influence of MP on top management commitment and diffusion of TQM specifically, both institutional theory as well as TQM literature suggest that these influences should also hold in the context of TQM. Thus, we hypothesize:

H3: Higher levels of mimetic pressures are related to higher levels of top management commitment.

3.2 Top Management Commitment and TQM Diffusion

Institutional theory suggests how coercive, normative, and mimetic pressures can affect how top managers choose to support the diffusion of innovations. However, the nature and intensity of this commitment to diffusion of practices such as TQM can vary widely between organizations. To account for this additional variance and increase predictive power and clarity, we draw on upper echelon theory. Liang et al. (2007) argue that human agents play a significant role in translating external pressures into desired managerial actions such as establishing policies or providing a conducive environment for the establishment and diffusion of new business practices.

Top management commitment might take the form of both top management belief and top management participation (Liang et al., 2017). With respect to this current research, top management belief refers to subjective assessments regarding the potential of TQM, while top management participation refers to the behaviour and actions performed to facilitate TQM diffusion (Ahire and Ravichandran, 2001). Hambrick and Mason (1984) further argue that organisational choices reflect the top management's values and cognitive bases. Hence, the positive beliefs of top managers about the usefulness of TQM result in certain managerial actions intended for diffusion of TQM. For instance, from an information systems perspective, Liang et al. (2007) argue that the beliefs of the top management can offer visions and guidelines to the managers and business units about the opportunities and risks in diffusion of ERP. Hence, we may argue that TMC may significantly influence the TQM diffusion. We conceptualize post-adoption diffusion following Hazen et al. (2012) in three stages: Acceptance (ACP), Routinisation (RO) and Assimilation (ASM). ACP has attracted significant attention from management scholars (see, Davis, 1989; Ahire and Ravichandran, 2001; Venkatesh et al. 2003; Hazen et al. 2012). ACP can be defined in the context of TQM as how well the organisation's constituents receive TQM. Hazen et al. (2012) have argued that once organisational constituents have accepted an innovation such as TQM as a guiding philosophy, then the process of it being routinised within the organisation is initiated. Inspired by the definition of Zmud and Apple (1992), we define TQM routinization as the permanent adjustment of the organisations' governance systems to account for TQM. We then use TQM assimilation (ASM) to denote the extent to which TQM is used in the organisation. Drawing upon previous studies on institutional theory and innovation diffusion (see, Jarvenpaa and Ives, 1991; Purvis et al. 2001; Ahire and Ravichandran, 2001; Liang et al. 2007) we argue that top management commitment may contribute to the ACP, RO, and ASM. Thus, we hypothesize:

H4: Higher levels of top management commitment are related to higher levels of ACP;
H5: Higher levels of top management commitment are related to higher levels of RO;
H6: Higher levels of top management commitment are related to higher levels of ASM.

3.3 Control Variables

We have based our arguments following Ahire and Ravichandran (2001), that organisation size (OS) may have significant influence on the diffusion process. Hence, in this study, we use measures of OS as control variables. To measure OS, we draw on Liang et al. (2007) and propose two measures: 'number of employees' and 'revenues'. Liang et al. (2007) note that large organisations are more resilient to hurdles that tend to slow down the diffusion process. Furthermore, decision making and execution can happen at a faster pace in smaller rather than larger organisations. Hence, we believe that OS may have a significant influence on diffusion and should therefore be controlled for.

4. Research Methods

4.1 Construct Operationalization and Measurement

Based on how the constructs were conceptualized in previous research, we consider all constructs as reflective. We used a survey method to collect data, and we developed our instrument following Churchill's (1979) guidelines. To improve the validity and reliability of our constructs, we adopted two phases. In the first phase, multi-item constructs were adopted from prior studies. For instance, the measure of CP was adapted from previous studies (see Liang et al. 2007; Nair and Prajago, 2009; Colwell and Joshi, 2013; Dubey et al. 2016) to fit the context of this research. In this way, all constructs were drawn from existing literature (see Table 2).

Table 2: Measures

Construct	Measure Derived From:	Items Used in This Research
Coercive Pressures (CP)	Liang et al. (2007); Nair and Prajago (2009); Colwell and Joshi (2013); Dubey et al. (2016)	1. State Government requires our organisation to adopt TQM (CP1). 2. The industry association requires our organisation to adopt TQM (CP2). 3. The customers of our organisation require our organisation to adopt TQM (CP3).
Normative Pressures (NP)	Liang et al. (2007); Nair and Prajago (2009); Dubey et al. (2016)	1. The extent to which your organisation's customers have adopted TQM (NP1). 2. The extent to which suppliers of your organisations have adopted TQM (NP2). 3. The extent to which professional bodies' promotion of TQM has influenced your organisation to adopt TQM (NP3).
Mimetic Pressures (MP)	Liang et al. (2007); Nair and Prajago (2009); Dubey et al. (2016)	Our main competitors who have adopted TQM: 1. Have greatly benefitted(MP1) 2. Are favourably perceived by others within the same industry (MP2). 3. Are favourably perceived by the customers (MP3). 4. Are favourably perceived by the suppliers (MP4).
Top Management Commitment (TMC)	Ahire et al. (1996); Ahire and Ravichandran (2001); Liang et al. (2007); Mokhtar and Yusof (2010); Overstreet et al. (2014); Dubey and Gunasekaran (2015)	1. TQM has potential to provide significant business benefits to the organisation (TMC1). 2. TQM will create significant competitive arena for the organisation (TMC2). 3. The senior management of your organisation have formulated a strategy for the organisation's use of TQM (TMC3).

		4. The senior management of your organisation share the TQM vision with all stakeholders of the organisation (including you) (TMC4). 5. The senior management has established the performance metrics to monitor the TQM project (TMC5). 6. The senior management recognizes the contribution of the partners engaged in TQM project (TMC6).
Acceptance (ACP)	Ahire and Ravichandran (2001); Hazen et al. (2012)	1. The degree to which you believe that embracing TQM philosophy helps you enhance your job performance (ACP1). 2. The degree to which you and your colleagues associate with the TQM philosophy (ACP2). 3. The degree to which you believe than an organisational and technical infrastructure exists to support use of the innovation (ACP3).
Routinization (RO)	Ahire and Ravichandran (2001); Hazen et al. (2012)	1. The degree to which procedures are established for replacement of old equipment (RO1). 2. The degree to which the TQM process is supported by the normal budgeting (RO2). 3. There is a dedicated organisational unit for TQM (RO3). 4. The degree to which supplies and repairs can be obtained according to organisational procedures (RO4). 5. The degree to which organisation can hire and retain qualified people (RO5).

Assimilation (ASM)	Liang et al. (2007); Hazen et al. (2012)	1. Volume of use: The extent to which your organisation has embraced TQM philosophy as guiding principles in every department (%) (ASM1). 2. Diversity: number of functional areas that are guided by TQM philosophy in your organisation (ASM2). 3. Depth: For each functional area indicated by you, identify the level at which the TQM philosophy is used: (a) Operations; (b) Management; (c) Decision making (ASM3).

To enhance the validity of the chosen measures, we interviewed twelve managers who have ten or more years of experience with TQM and asked them to provide feedback on the questionnaire. To assess the clarity of the questionnaire items and their satisfactory adaptation to the context of this research, we asked the twelve managers to assess the questionnaire in the presence of the researchers so that they could provide direct feedback and corrections could be discussed and implemented in near real-time. Based on this procedure, we clarified the constructs and the associated measurement items. Consistent with the call for research in operations and supply chain management literature (Flynn et al.1990; Malhotra and Grover, 1998; Fawcett et al. 2014), such additional analysis provides a useful method to validate items borrowed from other studies. Secondary data were collected from annual reports for those organisations comprising our sample frame. This strategy has helped us: (i) overcome the limitations of the reported literature and in-depth interviews by improving the generalizability of the measurement scales; and (ii) reduce key informant bias and common method bias (see Roth, 2007; Chan et al. 2016).

The measures listed in Table 2 were measured on a five-point Likert scale with anchors ranging from strongly disagree (1) to strongly agree (5). With respect to the dependent variables (TQM acceptance, routinization, and assimilation), respondents were asked to indicate the volume of use (i.e. the extent to which organisation has embraced TQM philosophy as guiding principles in every department), diversity of use (i.e. number of functional areas in an organisation that are guided by TQM philosophy), and depth of use (for each functional area, the level at which the TQM philosophy guides operation and decision making).

4.2 Sample and Data Collection

The auto-component manufacturing sector in India was chosen as the sample frame for two primary reasons. First, auto-component manufacturers in India have widely adopted TQM and second, the Indian auto-component sector is one of the leading sectors in the country and contributes almost 7% to the nation's GDP (IBEF, 2015). Facing competition from countries such as China, Malaysia, Indonesia, Vietnam and South Korea, Indian auto-component manufacturers are motivated to deliver high quality products at low cost (Iyer et al. 2013).

We gathered data by distributing 1100 questionnaires among 1100 auto-component manufacturing organisations situated in all four (north, south, east, and west) regions of India. Company information was extracted from two databases: the ACMA (Automotive Components Manufacturers Association of India) and Dun & Bradstreet. Following prior studies (Bowen et al. 2001; Menor and Roth, 2007; Chan et al. 2016), a package containing the structured questionnaire, a cover letter explaining the research, and a self-addressed pre-paid envelope were mailed to the senior quality manager at each auto-component manufacturing organisation that has adopted TQM in some way (as uncovered via our initial background research and selection of participants).

We made follow-up telephone calls to all potential participants after two weeks to ensure the package arrived and to clarify any questions about the research. After the first wave of mailing, 185 questionnaires were received. At five weeks, we again sent packages to those who had not responded. 115 questionnaires were subsequently returned for an overall response rate of 27.3%. Altogether, 300 completed questionnaires were received (please refer to Appendix 1 for demographics). All the returned surveys had been filled out properly, and there were no issues that would require any of them to be removed from the analysis. We attribute the quality of the survey responses to the communication medium (mailed survey via post versus online-based survey) and the follow-up telephone calls.

4.3 Non-response Bias

Guide and Ketokivi (2015) argue that non-response bias (NRB) is an issue associated with survey-based research. We do not claim to have eliminated the NRB in our study but we have used a mix of classical and recent arguments to ensure that the effect of NRB on our data is limited. We used an extrapolation method to test non-response bias as suggested by Armstrong and Overton (1977). The comparisons between early and late responses showed no statistical differences at $p < 0.05$, indicating that non-response bias is not a significant threat to validity. Next, following Fawcett et al.'s (2014) arguments (c.f. Wagner and Kemmerling, 2010), we

have also compared the demographics of the respondents and the non-respondents via Dun & Bradstreet and found that our sample is statistically homogenous with the broader population.

5. Data Analyses and Results

We used Warp PLS 5.0, which relies on the Partial Least Squares (PLS) method, to estimate the hypothesized relationships (Kock, 2015). Various scholars argue that PLS is a preferred method for exploratory research in that the resulting parameter estimates are robust to artefacts that commonly arise from the employment of new or revised measures in new sample frames (Henseler et al. 2009; Hair et al. 2012; Peng and Lai, 2012; Henseler et al. 2014; Filho et al. 2016; Leyer et al. 2017). Indeed, the proposed relationships between constructs in this study are guided by complementary yet distinct theories that are rarely examined in aggregate in the literature. Given these reasons, we chose PLS as the most appropriate method for data analysis in this study (Peng and Lai, 2012; Moshtari, 2016).

In conducting the model estimation, we followed two stages recommended by Peng and Lai (2012), examining validity and reliability of the measurement model and analysing the structural model. Appendices 2 and 3 illustrate the list of steps and criteria within two stages of PLS application in the model with reflective constructs.

5.1 Measurement Model

To assess the measurement model, we examined each construct's individual-item reliabilities, the convergent validity and discriminant validity of the measures associated with each construct. Appendix 2 provides an overview of the factor loadings (λ), scale construct reliability (SCR), and average variance extracted (AVE) of the reflective constructs. We found that the factor loadings were all greater than 0.5, the SCRs were calculated to be greater than 0.7, and the AVE for each construct was greater than 0.5 (Peng and Lai, 2012). Appendix 3 presents the correlations between paired constructs, and the leading diagonal of the matrix shows the square-root of the AVE of each construct. All measures indicate adequate discriminant validity (Fornell and Larcker, 1981; Peng and Lai, 2012).

5.2 Common Method Bias (CMB) and Endogeneity

Podsakoff and Organ (1986) suggest that when using single-source data, there is potential for CMB. To address CMB in our study, we followed the suggestion of Podsakoff et al. (2003) and performed Harman's one factor test to assess whether a single latent factor would account for all the theoretical constructs. The results from this test showed that the single factor explains

42.12 percent of total variance, demonstrating that CMB is not a significant threat. However, following guidance from a recent editorial note (Guide and Ketokivi, 2015) we understand that Harman's single factor test has its own limitations (c.f. Ketokivi and Schroeder, 2004). Thus, to ensure that CMB is not a major concern, we further used a method variance (MV) marker to assess common method variance (Lindell and Whitney, 2001). Using this method, we chose the five-item scale that measured routinization, which provided the lowest positive correlation (r=0.05) between the MV marker and other variables, to adjust the construct correlations and statistical significance (Lindell and Whitney, 2001). None of the significant correlations became non-significant after adjustment. To even further assess CMB, we compared the fit between the one-factor model, the measurement model with only traits, and the measurement model with both traits and a method factor (Dong et al. 2016). The one-factor model yielded a chi-square ($\varkappa^2$=2001.83, p<0.000), that was significantly worse than that of the measurement model with only traits. The chi-square of the measurement model with both traits and a method factor ($\varkappa^2$=386.94; p<0.000) did not significantly improve that of the measurement model with only traits. Thus, we further conclude that CMB is not a serious threat to the validity of the findings.

Before testing the research hypotheses, we tested for endogeneity of the exogenous variable in our model. CP, NP and MP are conceptualized as exogenous model variables to the acceptance, routinization and assimilation but not the other way around, in accordance with the literature (Ahire and Ravichandran, 1981; Hazen et al. 2012). Thus, endogeneity is unlikely to be a concern in this context. We further tested empirically whether the endogeneity was an issue by conducting the Durbin-Wu-Hausman test (Davidson and MacKinnon, 1993). We first regressed CP, NP and MP on all controls and TMC, then used the residual of the regression as an additional regressor in our hypothesized equations. The parameter estimate for the residual was not significant, indicating that the CP, NP and MP were not endogenous in our setting, consistent with its conceptualization.

5.3 Model Fit and Quality Indices

Average path coefficient (APC), Average R-squared (ARS), and Average block VIF (AVIF) are the three-model fit and quality indices estimated in this study, which are shown in Table 3. Relationships between the latent variables are predicted by these indices. The values of APC and ARS are found to be significant for the model as the p values are coming less than 0.05.

Table 3: Model fit and quality indices

Model Fit & Quality Indices	Value from Analysis	Acceptable if	References
Average Path Coefficient (APC)	0.367, p < .001	p < .05	Rosenthal and Rosnow (1991)
Average R-squared (ARS)	0.525, p < .001	p < .05	
Average block VIF (AVIF)	2.201	<= 5, ideally <= 3.3	Kock (2015)

According to Tenenhaus et al. (2005), there can be a single value for the goodness of fit analysis in the case of PLS analysis. We have calculated the goodness of fit value based on the R^2 and AVE estimates. We have also calculated the goodness of fit by using the average value of R^2 and the geometric mean of AVE as per the following formula:

GoF = $\sqrt{(Average\ R^2 * Geometric\ mean\ of\ AVE)}$

The goodness of fit value as calculated with the above formula for our current model is 0.629. According to Wetzels et al. (2009) baseline values for the relative fit of GoF estimate are 0.36 = large, 0.25 = medium, and 0.1 = small. Thus, based on these values, the GoF of our model is large.

5.4 Hypotheses Testing

PLS does not assume a multivariate normal distribution (Hair et al. 2016). Hence, traditional non-parametric based significance tests are inappropriate. PLS uses a bootstrapping technique to estimate standard errors and the significance of parameter estimates (Hair et al. 2011; Peng and Lai, 2012). The PLS path coefficients and p-values for the model (Figure 2) are reported in Table 4. The estimated path coefficients are interpreted as standardised beta coefficients in OLS (ordinary least squares) regression. For instance, based on the results presented below, if the level of CP changes by 1.0, we would expect TMC to change by 0.20, holding all other independent variables constant.

As shown in Table 3, the path from CP to TMC (β=0.20; p<0.01) is significant. Similarly, the paths NP→TMC (H2) (β=0.14; p<0.01) and MP→TMC (H3) (β=0.68; p<0.01) are found to be supported. Next, the paths joining TMC→ACP (H4) (β=0.84; p<0.01), TMC→RO (H5) (β=0.79; p<0.01) and TMC→ASM (H6) (β=0.45; p<0.01) are found to be supported.

Interestingly, the control variables for OS were found to have no significant influence on ACP (β=-0.00; p=0.49), RO (β=-0.11; p=0.06) or ASM (β=-0.10; p=0.08) in this model.

We interpret these observations to mean that the OS provides no additional power to predict ACP, RO and ASM in a model that already includes the variables CP, NP, MP, and TMC.

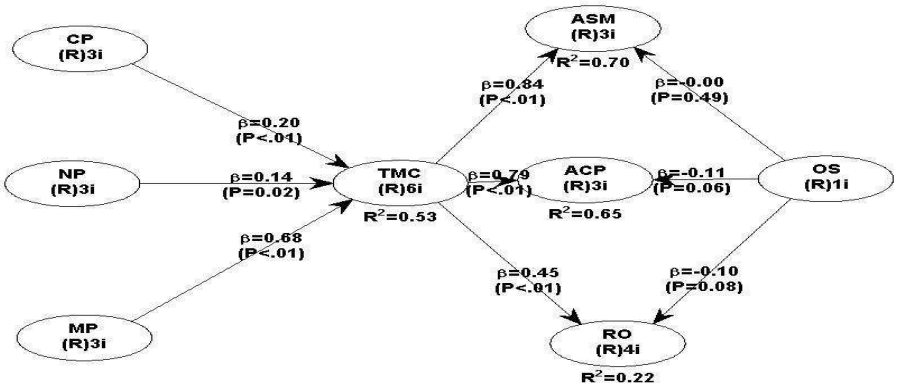


Figure 2: Final Causal Model

Table 4: Hypothesis Testing Results

Hypothesis	Effect of	on	β	p-value	Results
H1	CP	TMC	0.20	<0.01	supported
H2	NP	TMC	0.14	<0.01	supported
H3	MP	TMC	0.68	<0.01	supported
H4	TMC	ACP	0.84	<0.01	supported
H5	TMC	RO	0.79	<0.01	supported
H6	TMC	ASM	0.45	<0.01	supported

Note: CP = Coercive Pressure; NP = Normative Pressure; MP = Mimetic Pressure;
TMC = Top Management Commitment;
ACP = Acceptance; RO = Routinization; ASM = Assimilation

To evaluate the explanatory power of the model, we examined the R^2 value of the endogenous constructs. As shown in Table 5, the R^2 for TMC, ACP, RO and ASM are 0.53, 0.70, 0.65 and 0.22 respectively, which are moderately strong (Chin, 1998). To evaluate the effect size of each predictor construct, we use Cohen's f^2 formula (Cohen, 1988). f^2 is equal to

the increase in R^2 relative to the proportion of variance that remains unexplained in the endogenous latent variable. According to Cohen (1988) f^2 values of 0.35, 0.15 and 0.02 are considered large, medium and small. Consequently, the effect sizes of CP, NP and MP on TMC are 0.058, 0.071 and 0.399 (Table 5). Similarly, the effect sizes of TMC on ACP, RO and ASM are 0.704, 0.627 and 0.209 (Table 5).

To further asses the model's predictive capability, we calculated Stone-Geisser's Q^2. The Q^2 for endogenous constructs is 0.378, 0.647, 0.216 and 0.701 (Table 5) for TMC, ACP, RO and ASM, respectively. Because these values are greater than zero, the model indicates an acceptable predictive relevance (Peng and Lai, 2012).

Table 5: R^2, Prediction and Effect Size

Construct	**R^2**	**Q^2**	**f^2 in relation to**			
			TMC	ACP	RO	ASM
CP	-	-	0.058			
NP	-	-	0.071			
MP	-	-	0.399			
TMC	0.53	0.378		0.704	0.627	0.209
ACP	0.70	0.647				
RO	0.65	0.216				
ASM	0.22	0.701				

Note: CP = Coercive Pressure; NP = Normative Pressure; MP = Mimetic Pressure;
TMC = Top Management Commitment;
ACP = Acceptance; RO = Routinization; ASM = Assimilation

6. Discussion

In this study, we investigated to what extent institutional pressures influence TQM diffusion through top management commitment. The empirical results highlight the institutional pressures (i.e. CP, NP and MP) and TMC as strong predictors of TQM diffusion. The data analysis suggests that CP, NP and MP have significant influence on the TMC to adopt TQM, especially MP (β=0.68; $p<0.01$). Secondly, the effect size of the MP on TMC was found to be 0.399 which is considered high as per Cohen's (1988) suggestions. This finding is consistent with Westphal et al. (1997) who argue that the late adopters would try to imitate the early implementers. However, Westphal et al. (1997) and Sila (2007) remain silent on the other two pressures (coercive and normative).

We have examined the combined effect of CP, NP and MP under the mediating effect of TMC on the three stages of TQM diffusion (i.e. ACP, RO and ASM). The study findings provide an interesting insight that CP, NP and MP in combination explain 53 percent of total variation in the TMC for TQM adoption. TMC further explains 70 percent of total variation in the ACP, 65 percent of total variation in RO and 22 percent of the variation in ASM. Hence, we argue that TMC plays a significant role in the TQM diffusion, which is an important contribution to the literature.

In this research we illustrated the use of institutional theory and upper echelon theory to explain TQM diffusion; this is lacking from previous studies (see Westphal et al. 1997; Sila, 2007 and Kennedy and Fiss, 2009). Given the limitations of institutional theory, in this context, we further extended the TQM diffusion literature using a combination of institutional theory and upper echelon theory to improve the explanatory power of the model.

6.1 Theoretical contributions

The literature has focused on the diffusion processes (Kennedy and Fiss, 2009), imitation processes (DiMaggio & Powell, 1983) and trendsetters (Abrahamson, 1996). However, diffusion (post-implementation) processes have seen less attention. Our study addressed this gap using institutional theory and upper echelon theory (Ahire and Ravichandran, 2001; Hung, 2007; Zeng et al. 2015). Our research adds to the literature discussing the motivations of adoption (Kennedy and Fiss, 2009) from a sociological perspective, emphasizing the social embeddedness of organisations and motivations that stem primarily from a desire to appear legitimate to powerful constituents, peer organisations, or outside stakeholders (Abrahamson, 1991; DiMaggio & Powell, 1983; Kennedy and Fiss, 2009). We draw on the study of Tolbert and Zucker (1983) and argue that early adopters seek technical gains from adoption, but later adopters are primarily interested in the social benefits of appearing legitimate without compromising on economic gains; in this way, we extend the previous literature (see, Ahire and Ravichandran, 2001). The overall R^2 of our model is 0.525 in comparison to the R^2=0.23 of Ahire and Ravichandran (2001). Our model's higher R^2 could be attributed to our attempt to explain the TQM diffusion using integration of institutional and upper echelon theories.

Two key aspects of this study signify our contributions to the theory of TQM diffusion. First is the focus on post-implementation diffusion in the context of TQM. Our findings extend the work of Westphal et al. (1997) and Sila (2007) from the adoption phase to the three-stage diffusion stage of TQM. Considering that TQM may be challenging to assimilate among various organisational elements (Kennedy and Fiss, 2009), our findings are particularly

noteworthy. Our finding regarding the significant role played by the institutional forces may be interpreted as guiding the diffusion process, that is, the CP, NP and MP influence the behaviour of the top management and thus influence the TQM diffusion.

Second, this study integrates institutional forces, upper echelon theory, and the influence of top management on the diffusion process into one model and reconciles what had previously been presumed to independent in literature. In existing TQM literature, the top management commitment and three forces of the institutional influence are rarely examined (see Westphal et al. 1997; Sila, 2007 and Kennedy and Fiss, 2009). In this study, we illustrate that all three external forces impact TQM diffusion through their influence on the behaviour of the top management toward TQM.

6.2 Managerial Implications

As our study is focused on the post-adoption phases of diffusion, top managers should understand the level of their involvement that will be required even after a successful adoption of TQM in their organisation. In other words, after the adoption decision has been made and the new managerial innovation begins to be employed, top managers must remain actively engaged until the innovation is fully diffused if the organization is to achieve the desired results.

Our study has several implications for TQM adoption. Firstly, our empirical findings demonstrate the mediating role of TMC between external pressures and three stages of the TQM diffusion and thus support the notion that the top managers and the organisation need to align their organisational strategies to exploit the external pressures in achieving desired success through TQM diffusion. If top management are not committed to meta-structuring activities, the diffusion is likely to suffer. Fried (1995) argues that the existing TQM literature has failed to discuss the inhibitive role of the legal environment on TQM adoption. However, contrary to this popular view held by several managers, we have observed that the CP under the mediating effect of TMC, has a significant and positive effect on ACP, RO and ASM. The findings of our study support King's (1995) response to Fried's (1995) arguments. Hence, our results offer useful guidance to those managers who have often criticized the legal environment for the failure of TQM initiatives.

Secondly, our study results support the previous arguments (see Ahire and Ravichandran, 2001; Hung, 2007) on how both collaboration between a focal organisation and customers/suppliers and the influence of the external professional bodies shape the TMC. In turn the TMC has significant and positive effect on ACP, RO and ASM. Our findings partially support important literature (see, Ahire and Ravichandran, 2001; Cho et al. 2017). However,

organisations especially in the emerging economies have failed to align their organisational strategies to the prevailing environment. In this regard our study results r support those of Ahire and Ravichandran (2001). We argue that the managers of an organisation which seeks to derive significant and positive benefits from TQM diffusion need to focus on their customers and suppliers, and must maintain good association with professional bodies to ensure that organisational practices are in line.

Thirdly, our study results highlight the significant and positive influence of the perceptions of the customers, suppliers and the industry on TMC which in turn has positive effect on the ACP, RO and ASM. Hence, managers and the organisation must together continuously engage with the customers, suppliers and industry to get regular inputs on their product and service quality, which in turn further helps establish a positive perception of the organisation.

7. Conclusion, limitations and future research directions

Drawing broadly on institutional theory, upper echelon theory and TQM diffusion literature, we developed a theoretical model to explain TQM diffusion in an organisation. Our theoretical model reconciles two well established streams of literature (i.e. the influence of TMC on TQM diffusion and role of institutional pressures on TQM diffusion). The findings of our study make a useful contribution to the existing TQM diffusion literature and provide useful guidelines to the practitioners.

Although we designed and controlled the study to reduce risks to validity and reliability, it is important to emphasize research limitations that might affect the research findings. Fortunately, most of these limitations can be addressed by future research in such a way as to further refine and confirm our results. Firstly, we used cross-sectional data to test our research hypotheses. A longitudinal study would further enhance our understanding by offering more information about how TQM ascends through stages of diffusion. Secondly, the current study adopts three stages of post-adoption diffusion: acceptance, routinization and assimilation. Future research can employ longitudinal data to understand how acceptance leads to routinization and routinization leads to assimilation, as well as potentially other relationships amongst those three variables. Since our scales differ in some respects from those used by other researchers (notably Ahire and Ravichandran 2012) and many terms such as diffusion, acceptance and adoption are defined inconsistently in literature, we identify the innovation stages themselves as a topic for future research. Thirdly, we have not included incorporation as a construct as argued by Hazen et al. (2012) or not included employee involvement,

empowerment and other soft dimensions of TQM. This is consistent with research extending the original diffusion model to include managerial innovations (Douglas et al., 2016) such as TQM. Fourthly, we collected data from a single informant from each firm. Most of the firms, especially medium or large scale, involve groups of senior managers who make decisions on strategic issues such as TQM adoption. Although most of the informants held senior positions, they were not all CEOs; thus, their individual perceptions of the organisation's TQM adoption might not accurately represent divergent opinions of others on the top management team. Therefore, we suggest that future research should develop ways to obtain differing perspectives across management. Finally, the demographic of our sample may limit the generalizability of our results. To eliminate the noise caused by industry differences, we purposely chose manufacturing companies. To avoid interference caused by varying professional backgrounds, we chose informants who had similar training. Although these choices may enhance the internal validity of our study, the external validity might not be as robust. Thus, as with any research findings, the results from our statistical analyses should be interpreted with caution when informing other contexts. Yet again, this provides another opportunity for future research to extend, confirm, or refute our findings.

Appendix 1: Demographic Profiles

Title	Number	%
CEO	15	5.00
COO	40	13.33
Finance Manager	15	5.00
Quality Manager	115	38.33
Human Resource Manager	15	5.00
Procurement Manager	50	16.67
Customer Relationship Manager	35	11.67
Sales Manager	15	5.00

Appendix 2: Loadings of Indicator Variables (Scale Composite Reliability and Average Variance Extracted)

Constructs	Measures	Factor Loading	Variance	Error	SCR	AVE
CP	CP1	0.72	0.52	0.48	0.80	0.58
	CP2	0.65	0.43	0.57		
	CP3	0.88	0.78	0.22		
NP	NP1	0.52	0.27	0.73	0.76	0.52
	NP2	0.78	0.60	0.40		
	NP3	0.83	0.68	0.32		
MP	MP1	0.94	0.88	0.12	0.93	0.78
	MP2	0.89	0.79	0.21		
	MP3	0.92	0.85	0.15		
	MP4	0.78	0.61	0.39		
TMC	TMC1	0.78	0.61	0.39	0.92	0.65
	TMC2	0.83	0.69	0.31		
	TMC3	0.83	0.70	0.30		
	TMC4	0.81	0.66	0.34		
	TMC5	0.81	0.65	0.35		
	TMC6	0.79	0.63	0.37		
ASM	ASM1	0.75	0.56	0.44	0.77	0.53
	ASM2	0.61	0.37	0.63		
	ASM3	0.81	0.65	0.35		
ACP	ACP1	0.97	0.94	0.06	0.95	0.86
	ACP2	0.97	0.94	0.06		
	ACP3	0.85	0.72	0.28		
RO	RO1	0.63	0.39	0.61	0.76	0.78
	RO2	0.62	0.38	0.62		
	RO4	0.72	0.52	0.48		
	RO5	0.68	0.47	0.53		

Note: CP = Coercive Pressure; NP = Normative Pressure; MP = Mimetic Pressure;

TMC = Top Management Commitment;

ACP = Acceptance; RO = Routinization; ASM = Assimilation

Appendix 3: Correlations among major constructs

	CP	NP	MP	TMC	ASM	ACP	RO
CP	0.76						
NP	0.53	0.72					
MP	-0.02	-0.10	0.88				
TMC	0.11	0.45	-0.12	0.81			
ASM	-0.14	-0.01	0.35	0.08	0.73		
ACP	0.14	0.28	-0.12	0.13	-0.06	0.93	
RO	0.05	0.13	-0.15	0.11	-0.05	0.33	0.88

Note: The leading diagonal of the matrix represented in grey shade includes the square root of the average variance extracted.

CP = Coercive Pressure; NP = Normative Pressure; MP = Mimetic Pressure;

TMC = Top Management Commitment;

ACP = Acceptance; RO = Routinization; ASM = Assimilation;

References

ACMA (2015). http://www.acma.in/docmgr/ACMA_Presentation/ACMA_Presentation.pdf (date of access: 15th December, 2015).

Abrahamson, E. (1991). Managerial fads and fashions: The diffusion and rejection of innovations. Academy of management review, 16(3), 586-612.

Abrahamson, E., & Rosenkopf, L. (1993). Institutional and competitive bandwagons: Using mathematical modeling as a tool to explore innovation diffusion. Academy of Management Review, 18(3), 487-517.

Abrahamson, E. (1996). Management fashion. Academy of Management Review, 21(1), 254-285.

Ahire, S. L., Golhar, D. Y., & Waller, M. A. (1996). Development and validation of TQM implementation constructs. Decision sciences, 27(1), 23-56.

Ahire, S. L., & Ravichandran, T. (2001). An innovation diffusion model of TQM implementation. IEEE Transactions on Engineering Management, 48(4), 445-464.

Akgün, A. E., Ince, H., Imamoglu, S. Z., Keskin, H., & Kocoglu, İ. (2014). The mediator role of learning capability and business innovativeness between total quality management and financial performance. International Journal of Production Research, 52(3), 888-901.

Aragón-Correa, J. A., & Sharma, S. (2003). A contingent resource-based view of proactive corporate environmental strategy. Academy of Management Review, 28(1), 71-88.

Beer, M. (2003). Why total quality management programs do not persist: the role of management quality and implications for leading a TQM transformation. Decision Sciences, 34(4), 623-642.

Berry, T. H. (1991). Managing the total quality transformation. New York: McGraw-Hill.

Besterfield, D.H. (1995). Total Quality Management, New Jersey: Prentice Hall Inc.

Bou-Llusar, J. C., Escrig-Tena, A. B., Roca-Puig, V., & Beltrán-Martín, I. (2009). An empirical assessment of the EFQM Excellence Model: Evaluation as a TQM framework relative to the MBNQA Model. Journal of Operations Management, 27(1), 1-22.

Bowen, F. E., Cousins, P. D., Lamming, R. C., & Farukt, A. C. (2001). The role of supply management capabilities in green supply. Production and Operations Management, 10(2), 174-189.

Brush, T. H., & Artz, K. W. (1999). Toward a contingent resource-based theory: The impact of information asymmetry on the value of capabilities in veterinary medicine. Strategic Management Journal, 20(3), 223-250.

Calvo-Mora, A., Picón, A., Ruiz, C., & Cauzo, L. (2013). The relationships between soft-hard TQM factors and key business results. International Journal of Operations & Production Management, 34(1), 115-143.

Calvo-Mora, A., Picón-Berjoyo, A., Ruiz-Moreno, C., & Cauzo-Bottala, L. (2015). Contextual and mediation analysis between TQM critical factors and organisational results in the EFQM Excellence Model framework. International Journal of Production Research, 53(7), 2186-2201.

Chan, T. Y., Wong, C. W., Lai, K. H., Lun, V. Y., Ng, C. T., & Ngai, E. W. (2016). Green Service: Construct Development and Measurement Validation. Production and Operations Management. 25(3) 432–457 DOI: 10.1111/poms.12407.

Chin, W. W. (1998). Commentary: Issues and opinion on structural equation modelling. MIS Quarterly, 22 (1), vii-xvi.

Cho, Y. S., Jung, J. Y., & Linderman, K. (2017). The QM Evolution: Behavioral Quality Management as a Firm's Strategic Resource. International Journal of Production Economics. 191, 233-249.

Churchill Jr, G. A. (1979). A paradigm for developing better measures of marketing constructs. Journal of Marketing Research, 16(1), 64-73.

Cohen, J. (1988). The partial least squares approach for structural equation modelling. G.A Marcoulides, ed. Modern Methods for Business Research. Mahwah, NJ: Lawrence Erlbaum Associates, London, pp. 295-336.

Cooper, R. B., & Zmud R. W. (1990). Information technology implementation research: A technological diffusion approach. Management Science, 36(2) 123–139.

Corredor, P., & Goñi, S. (2011). TQM and performance: Is the relationship so obvious? Journal of Business Research, 64(8), 830-838.

Dacin, M. T., Goodstein, J., & Scott, W. R. (2002). Institutional theory and institutional change: Introduction to the special research forum. Academy of Management Journal, 45(1), 45-57.

Damanpour, F. (1987). The adoption of technological, administrative, and ancillary innovations: Impact of organizational factors. Journal of Management, 13(4), 675-688.

Das, A., Kumar, V., & Kumar, U. (2011). The role of leadership competencies for implementing TQM: An empirical study in Thai manufacturing industry. International Journal of Quality & Reliability Management, 28(2), 195-219.

Davidson, R., & MacKinnon, J. G. (1993). Estimation and inference in econometrics. Oxford University Press, New York.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13(3), 319-340.

Delmas, M. A., & Toffel, M. W. (2008). Organizational responses to environmental demands: Opening the black box. Strategic Management Journal, 29(10), 1027-1055.

DiMaggio, P. J., & Powell, W. W. (1983). The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields. American Sociological Review, 48(2), 147-160.

Donaldson, L. (1999). The normal science of structural contingency theory. Studying Organizations: Theory and Method. Thousand Oaks, Calif: Sage, 51-70.

Donauer, M., Peças, P., & Azevedo, A. L. (2015). Nonconformity tracking and prioritisation matrix: an approach for selecting nonconformities as a contribution to the field of TQM. Production Planning & Control, 26(2), 131-149.

Dong, M. C., Ju, M., & Fang, Y. (2016). Role hazard between supply chain partners in an institutionally fragmented market. Journal of Operations Management, 46, 5-18.

Douglas, M. A., Overstreet, R. E., & Hazen, B. T. (2016). Art of the possible or a fool's errand? Diffusion of large scale management innovation. Business Horizons, 59, 379-389.

Dubey, R., & Gunasekaran, A. (2015). Exploring soft TQM dimensions and their impact on firm performance: some exploratory empirical results. International Journal of Production Research, 53(2), 371-382.

Duncan, R. B. (1972). Characteristics of organizational environments and perceived environmental uncertainty. Administrative Science Quarterly, 17(3), 313-327.

Ebrahimi, M., & Sadeghi, M. (2013). Quality management and performance: An annotated review. International Journal of Production Research, 51(18), 5625-5643.

Fawcett, S. E., Waller, M. A., Miller, J. W., Schwieterman, M. A., Hazen, B. T., & Overstreet, R. E. (2014). A Trail Guide to Publishing Success: Tips on Writing Influential Conceptual, Qualitative, and Survey Research. Journal of Business Logistics, 35(1), 1-16.

Fichman, R. G., & Kemerer, C. F., 1997. The assimilation of software process innovations: An organizational learning perspective. Management Science. 43(10) 1345–1363.

Filho, M.G., Ganga, G. M. D., & Gunasekaran, A. (2016). Lean manufacturing in Brazilian small and medium enterprises: implementation and effect on performance. International Journal of Production Research, 54(24), 7523-7545.

Flynn, B. B., Sakakibara, S., Schroeder, R. G., Bates, K. A., & Flynn, E. J. (1990). Empirical research methods in operations management. Journal of Operations Management, 9(2), 250-284.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. Journal of Marketing Research, 18(3), 39-50.

Fried, Y. (1995). TQM and the legal environment in the United States: A neglected issue in the TQM literature. The Academy of Management Review, 21(1), 15-17.

García-Bernal, J., & García-Casarejos, N. (2014). Economic analysis of TQM adoption in the construction sector. Total Quality Management & Business Excellence, 25(3-4), 209-221.

García-Bernal, J., & García-Casarejos, N. (2016). Determinants in the adoption of total quality management (TQM) in the construction sector. Revista de la Construcción. Journal of Construction, 15(2), 28-36.

Greenwood, R., & Hinings, C. R. (1996). Understanding radical organizational change: Bringing together the old and the new institutionalism. Academy of Management Review, 21(4), 1022-1054.

Guide, V. D. R., & Ketokivi, M. (2015). Notes from the Editors: Redefining some methodological criteria for the journal. Journal of Operations Management, 37, v-viii.

Guler, I., Guillén, M. F., & Macpherson, J. M. (2002). Global competition, institutions, and the diffusion of organizational practices: The international spread of ISO 9000 quality certificates. Administrative Science Quarterly, 47(2), 207-232.

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. Journal of Marketing Theory and Practice, 19(2), 139-152.

Hair, J. F., Sarstedt, M., Pieper, T. M., & Ringle, C. M. (2012). The use of partial least squares structural equation modeling in strategic management research: a review of past practices and recommendations for future applications. Long Range Planning, 45(5), 320-340.

Hair Jr, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2016). A primer on partial least squares structural equation modeling (PLS-SEM). Sage Publications, Los Angeles.

Hambrick, D. C. (2007). Upper echelons theory: An update. Academy of Management Review, 32(2), 334-343.

Handfield, R., Jayaram, J., & Ghosh, S. (1999). An empirical examination of quality tool deployment patterns and their impact on performance. International Journal of Production Research, 37(6), 1403-1426.

Hart, P. J., & Saunders, C. S. (1998). Emerging electronic partnerships: antecedents and dimensions of EDI use from the supplier's perspective. Journal of Management Information Systems, 14(4), 87-111.

Hazen, B. T., Hanna, J. B., & Hall, D. J. (2014). Incorporating logistics enterprise architecture: A diffusion of innovation perspective. International Journal of Logistics: Research & Applications, 17(3), 179-99.

Hazen, B. T., Overstreet, R. E., & Cegielski, C. G. (2012). Supply chain innovation diffusion: going beyond adoption. The International Journal of Logistics Management, 23(1), 119-134.

Henseler, J., Ringle, C. & Sinkovics, R. (2009). The Use of Partial Least Squares Path Modeling in International Marketing, Advances in International Marketing, 20, 277–319.

Henseler, J., Dijkstra, T. K., Sarstedt, M., Ringle, C. M., Diamantopoulos, A., Straub, D. W., & Calantone, R. J. (2014). Common beliefs and reality about PLS: Comments on Rönkkö and Evermann (2013). Organizational Research Methods, 17(2), 182-209.

Hietschold, N., Reinhardt, R., & Gurtner, S. (2014). Measuring critical success factors of TQM implementation successfully–a systematic literature review. International Journal of Production Research, 52(21), 6254-6272.

Hu, Q., & Quan, J. (2006). The institutionalization of IT budgeting: empirical evidence from the financial sector. Information Resources Management Journal, 19(1), 84-97.

Hung, H. M. (2007). Influence of the environment on innovation performance of TQM. Total Quality Management & Business Excellence, 18(7), 715-730.

IBEF (2015).http://www.ibef.org/industry/autocomponents-india.aspx (Date of access: 13th December, 2015).

Iyer, A., Saranga, H., & Seshadri, S. (2013). Effect of quality management systems and total quality management on productivity before and after: Empirical evidence from the Indian auto component industry. Production and Operations Management, 22(2), 283-301.

Jarvenpaa, S. L., & Ives, B. (1991). Executive involvement and participation in the management of information technology. MIS Quarterly, 15(2), 205-227.

Jayaram, J., Ahire, S. L., & Dreyfus, P. (2010). Contingency relationships of firm size, TQM duration, unionization, and industry context on TQM implementation—A focus on total effects. Journal of Operations Management, 28(4), 345-356.

Jones, J. P., & Seraphim, D. (2008). TQM implementation and change management in an unfavourable environment. Journal of Management Development, 27(3), 291-306.

Jun, M., Cai, S., & Peterson, R. (2004). Obstacles to TQM implementation in Mexico's maquiladora industry. Total Quality Management & Business Excellence, 15(1), 59-72.

Kauppi, K. (2013). Extending the use of institutional theory in operations and supply chain management research: Review and research suggestions. International Journal of Operations & Production Management, 33(10), 1318-1345.

Kennedy, M. T., & Fiss, P. C. (2009). Institutionalization, framing, and diffusion: The logic of TQM adoption and implementation decisions among US hospitals. Academy of Management Journal, 52(5), 897-918.

Ketokivi, M.A., & Schroeder, R.G. (2004). Strategic, structural contingency and institutional explanations in the adoption of innovative manufacturing practices. Journal of Operations Management, 22(1), 63-89.

Kiatcharoenpol, T., Punnakitikashem, P., & Laosirihongthong, T. (2010, October). Adoption and assimilation of TQM strategy from parent company to overseas plant in Thailand. In Industrial Engineering and Engineering Management (IE&EM), 2010 IEEE 17Th International Conference on (pp. 1887-1890). IEEE.

King, W. C. (1995). The Legal Environment as a Nonissue for TQM Organizational Transformations. Academy of Management Review, 20(4), 787-788.

Kock, N. WarpPLS 5.0 User Manual. 2015. Laredo, TX: ScriptWarp Systems.

Korunka, C., Frank, H., Lueger, M., & Mugler, J. (2003). The entrepreneurial personality in the context of resources, environment, and the startup process — A configurational approach. Entrepreneurship Theory and Practice, 28(1), 23-42.

Kostova, T., & Roth, K. (2002). Adoption of an organizational practice by subsidiaries of multinational corporations: Institutional and relational effects. Academy of Management Journal, 45(1), 215-233.

Kwon, T. H. & Zmud, R. W. (1987). Unifying the fragmented models of information systems implementation, in R. J. Boland Jr and R. A. Hirschheim, Eds. Critical Issues in Information Systems Research, New York: Wiley

Lee, D. Y., & Dawes, P. L. (2005). Guanxi, trust, and long-term orientation in Chinese business markets. Journal of International Marketing, 13(2), 28-56.

Lee, V. H., Ooi, K. B., Sohal, A. S., & Chong, A. Y. L. (2012). Structural relationship between TQM practices and learning organisation in Malaysia's manufacturing industry. Production Planning & Control, 23(10-11), 885-902.

Leyer, M., Stumpf-Wollersheim, J., & Pisani, F. (2017). The influence of process-oriented organisational design on operational performance and innovation: a quantitative analysis in the financial services industry. International Journal of Production Research, 55(18),5259-5270.

Liang, H., Saraf, N., Hu, Q., & Xue, Y. (2007). Assimilation of enterprise systems: the effect of institutional pressures and the mediating role of top management. MIS Quarterly, 31(1), 59-87.

Lindell, M. K., & Whitney, D. J. (2001). Accounting for common method variance in cross-sectional research designs. Journal of Applied Psychology, 86(1), 114-121.

Ling-Yee, L. (2007). Marketing resources and performance of exhibitor firms in trade shows: A contingent resource perspective. Industrial Marketing Management, 36(3), 360-370.

Lo, C. K., Yeung, A. C., & Cheng, T. E. (2011). Meta-standards, financial performance and senior executive compensation in China: an institutional perspective. International Journal of Production Economics, 129(1), 119-126.

Malhotra, M. K., & Grover, V. (1998). An assessment of survey research in POM: from constructs to theory. Journal of Operations Management, 16(4), 407-425.

Menor, L. J., & Roth, A. V. (2007). New service development competence in retail banking: Construct development and measurement validation. Journal of Operations Management, 25(4), 825-846.

Mokhtar, S. S. M., & Yusof, R. Z. (2010). The influence of top management commitment, process quality management and quality design on new product performance: A case of Malaysian manufacturers. Total Quality Management, 21(3), 291-300.

Moshtari, M. (2016). Inter-organizational fit, relationship management capability, and collaborative performance within a humanitarian setting. Production and Operations Management, 25(9), 1542-1557.

Nair, A., & Prajogo, D. (2009). Internalisation of ISO 9000 standards: the antecedent role of functionalist and institutionalist drivers and performance implications†. International Journal of Production Research, 47(16), 4545-4568.

Ng, S. C., Rungtusanatham, J. M., Zhao, X., & Ivanova, A. (2015). TQM and environmental uncertainty levels: profiles, fit, and firm performance. International Journal of Production Research, 53(14), 4266-4286.

Ng, S. C., Zhao, X., Fan, X., & Rungtusanatham, J. M. (2014). TQM and brand-building by Chinese original brand manufacturers: impact on business performance. International Journal of Production Research, 52(3), 825-846.

Oliver, C. (1997). Sustainable competitive advantage: Combining institutional and resource-based views. Strategic Management Journal, 18(9), 697-713.

Osayawe Ehigie, B., & McAndrew, E. B. (2005). Innovation, diffusion and adoption of total quality management (TQM). Management Decision, 43(6), 925-940.

Overstreet, R. E., Hazen, B. T., Skipper, J. B., & Hanna, J. B. (2014). Bridging the gap between strategy and performance: using leadership style to enable structural elements. Journal of Business Logistics, 35(2), 136-149.

Peng, D. X., & Lai, F. (2012). Using partial least squares in operations management research: A practical guideline and summary of past research. Journal of Operations Management, 30(6), 467-480.

Podsakoff, P. M., & Organ, D. W. (1986). Self-reports in organizational research: Problems and prospects. Journal of Management, 12(4), 531-544.

Podsakoff, P.M., MacKenzie, S.B., Podsakoff, N.P. & Lee, J.Y. (2003). The mismeasure of man(agement) and its implications for leadership research. The Leadership Quarterly, 14, 615-656

Powell, T. C. (1995). Total quality management as competitive advantage: a review and empirical study. Strategic Management Journal, 16(1), 15-37.

Purvis, R. L., Sambamurthy, V., & Zmud, R. W. (2001). The assimilation of knowledge platforms in organizations: An empirical investigation. Organization Science, 12(2), 117-135.

Rahman, S. U. (2004). The future of TQM is past. Can TQM be resurrected? Total Quality Management & Business Excellence, 15(4), 411-422.

Rosenthal, R., & Rosnow, R. L. (1991). Essentials of behavioral research: Methods and data analysis. McGraw-Hill Humanities Social.

Roth, A. V. (2007). Applications of empirical science in manufacturing and service operations. Manufacturing & Service Operations Management, 9(4), 353-367.

Ruiz-Carrillo, J. I. C., & Fernández-Ortiz, R. (2005). Theoretical foundation of the EFQM model: the resource-based view. Total Quality Management & Business Excellence, 16(1), 31-55.

Saremi, M., Mousavi, S. F., & Sanayei, A. (2009). TQM consultant selection in SMEs with TOPSIS under fuzzy environment. Expert Systems with Applications, 36(2), 2742-2749.

Sila, I. (2007). Examining the effects of contextual factors on TQM and performance through the lens of organizational theories: An empirical study. Journal of Operations Management, 25(1), 83-109.

Silvestro, R. (2001). Towards a contingency theory of TQM in services - How implementation varies on the basis of volume and variety. International Journal of Quality & Reliability Management, 18(3), 254-288.

Sirmon, D. G., & Hitt, M. A. (2009). Contingencies within dynamic managerial capabilities: interdependent effects of resource investment and deployment on firm performance. Strategic Management Journal, 30(13), 1375-1394.

Soltani, E. (2005). Top management: A threat or an opportunity to TQM? Total Quality Management & Business Excellence, 16(4), 463-476.

Sousa, R., & Voss, C. A. (2002). Quality management re-visited: a reflective review and agenda for future research. Journal of Operations Management, 20(1), 91-109.

Spencer, B. A. (1994). Models of organization and total quality management: a comparison and critical evaluation. Academy of Management Review, 19(3), 446-471.

Steingard, D. S., & Fitzgibbons, D. E. (1993). A postmodern deconstruction of total quality management (TQM). Journal of Organizational Change Management, 6(5), 27-42.

Taylor, W. A., & Wright, G. H. (2003). A longitudinal study of TQM implementation: factors influencing success and failure. Omega, 31(2), 97-111.

Tena, A. B. E., Llusar, J. C. B., & Puig, V. R. (2001). Measuring the relationship between total quality management and sustainable competitive advantage: A resource-based view. Total Quality Management, 12(7-8), 932-938.

Tenenhaus, M., Vinzi, V.E., Chatelin, Y.M., Lauro, C., (2005). PLS path modeling. Computational Statistics and Data Analysis, 48 (1), 159-205.

Tolbert, P. S., & Zucker, L. G. (1983). Institutional sources of change in the formal structure of organizations: The diffusion of civil service reform, 1880-1935. Administrative Science Quarterly, 28(1), 22-39.

Tornatzky, L. G., Klein, K., (1982). Innovation characteristics and innovation implementation: A meta-analysis of findings. IEEE Transactions on Engineering Management 29(1) 28–45.

Valmohammadi, C., & Roshanzamir, S. (2015). The guidelines of improvement: Relations among organizational culture, TQM and performance. International Journal of Production Economics, 164, 167-178.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. MIS Quarterly, 27(3), 425-478.

Wagner, S. M., & Kemmerling, R. (2010). Handling nonresponse in logistics research. Journal of Business Logistics, 31(2), 357-381.

Waldman, D. A. (1994). The contributions of total quality management to a theory of work performance. Academy of Management Review, 19(3), 510-536.

Weber, M. (2009). The theory of social and economic organization. Simon and Schuster.

Westphal, J. D., Gulati, R., & Shortell, S. M. (1997). Customization or conformity? An institutional and network perspective on the content and consequences of TQM adoption. Administrative Science Quarterly, 42(2), 366-394.

Wetzels, M., Odekerken-Schröder, G., & Van Oppen, C. (2009). Using PLS path modeling for assessing hierarchical construct models: Guidelines and empirical illustration. MIS Quarterly, 33(1), 177-195.

Wruck, K. H., & Jensen, M. C. (1994). Science, specific knowledge, and total quality management. Journal of Accounting and Economics, 18(3), 247-287.

Young, G. J., Charns, M. P., & Shortell, S. M. (2001). Top manager and network effects on the adoption of innovative management practices: a study of TQM in a public hospital system. Strategic Management Journal, 22(10), 935-951.

Yusof, S. R. M., & Aspinwall, E. (2000). Total quality management implementation frameworks: comparison and review. Total Quality Management, 11(3), 281-294.

Zatzick, C. D., Moliterno, T. P., & Fang, T. (2012). Strategic (MIS) FIT: The implementation of TQM in manufacturing organizations. Strategic Management Journal, 33(11), 1321-1330.

Zeng, J., Phan, C. A., & Matsui, Y. (2015). The impact of hard and soft quality management on quality and innovation performance: An empirical study. International Journal of Production Economics, 162, 216-226.

Zhao, X., Li, Y., & Flynn, B. B. (2013). The financial impact of product recall announcements in China. International Journal of Production Economics, 142(1), 115-123.

Zmud, R. W., & Apple, L. E. (1992). Measuring technology incorporation/infusion. Journal of Product Innovation Management, 9(2), 148-155.