

The Influence of Transformational Leadership on Construction Services Business Performance Through TQM and Digital Capabilities in the Post-Covid-19 Era

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Abstract. *The construction industry is one of the many global businesses that have felt the serious impact during the COVID-19 pandemic. Research on the construction services industry in the post-covid-19 era aims to: 1). Analyzing the influence of transformational leadership on company performance. 2) Analyze the influence of transformational leadership on digital capabilities. 3) Analyze the influence of transformational leadership on TQM. 4) Analyzing the influence of digital capabilities on performance, and 5) Analyzing the influence of TQM on performance. This study uses a quantitative approach. The research respondents were 100 leaders of construction service companies in Jakarta, the capital city of Indonesia. Data was collected through a questionnaire instrument. Data analysis was carried out using Structural Equation Model (SEM) With Partial Least Square (PLS). This research was carried out with a series of test scenarios, namely 1). digital capability as a mediator variable without TQM; 2). TQM as a mediator variable without digital capabilities; and 3). Digital capabilities together with TQM become a mediator between transformational leadership and performance. The research results show that without implementing TQM, digital capabilities mediate the relationship between transformational performance. Without digital capabilities, TQM completely mediates the influence of transformational leadership on performance. If digital capabilities and TQM are used as mediation simultaneously, TQM becomes a complete mediating variable in the relationship between transformational leadership and the performance of construction service companies in the post-Covid-19 era. This research opens up opportunities and recommends the emergence of research that integrates TQM-Digital.*

Keywords: Transformational leadership, digital capabilities, TQM and Performance.

Abstrak. *Industri konstruksi merupakan salah satu dari sekian banyak bisnis global yang merasakan dampak serius selama pandemi COVID-19. Penelitian pada industri jasa konstruksi dimasa post-covid-19 ini bertujuan untuk: 1). Menganalisis pengaruh kepemimpinan transformasional terhadap kinerja perusahaan. 2) Menganalisis pengaruh kepemimpinan transformasional terhadap kapabilitas digital. 3) Menganalisis pengaruh kepemimpinan transformasional terhadap TQM. 4) Menganalisis pengaruh kapabilitas digital terhadap kinerja, dan 5) Menganalisis pengaruh TQM terhadap kinerja. Penelitian ini menggunakan pendekatan kuantitatif. Responden penelitian adalah 100 orang pimpinan perusahaan jasa konstruksi di Jakarta, ibu kota Indonesia. Data dikumpulkan melalui instrumen kuesioner. Analisis data dilakukan dengan Structural Equation Model (SEM) With Partial Least Square (PLS). Penelitian ini dilakukan dengan serangkaian skenario uji, yakni 1). kapabilitas digital sebagai variabel mediator tanpa TQM; 2). TQM sebagai variabel mediator tanpa Kapabilitas digital; dan 3). Kapabilitas digital secara bersama-sama dengan TQM menjadi mediator antara kepemimpinan transformasional terhadap kinerja. Hasil penelitian menunjukkan bahwa tanpa penerapan TQM, kapabilitas digital memediasi hubungan antara transformasional terhadap kinerja. Tanpa kapabilitas digital, TQM memediasi secara penuh pengaruh antara kepemimpinan transformasional terhadap kinerja. Jika kapabilitas digital dan TQM dijadikan sebagai mediasi secara bersamaan maka TQM menjadi variabel mediasi secara penuh hubungan antara kepemimpinan transformasional leadership terhadap kinerja perusahaan jasa konstruksi dimasa post-Covid-19. Penelitian ini membuka peluang sekaligus merekomendasikan bagi munculnya penelitian yang mengintegrasikan TQM-Digital.*

Kata Kunci: Kepemimpinan transformasional, kapabilitas digital, TQM dan kinerja.

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Introduction

In a release issued by the International Labour Organization (ILO), the construction industry is one of the many global businesses that have felt the serious impact during the COVID-19 pandemic. Due to the construction sector's sensitivity to economic cycles, construction companies and workers are highly vulnerable to a drastic decline in economic activities caused by the pandemic. In turn, recovery measures are crucial through the transformation of the industry towards sustainability and digitization (UN, 2020).

According to information from the Ministry of Public Works and Housing of the Republic of Indonesia, the COVID-19 pandemic has directly affected budget cuts, project delays, material constraints, labor issues, and cost overruns. Out of a total of 5,564 projects, only 2,373 (43%) were successfully completed in 2020 (PURP, 2020).

The increased workload on construction companies due to the COVID-19 pandemic has had a significant impact on the sustainability of construction service companies, with some even ceasing operations. The Indonesian National Construction Companies Association (Gapensi, 2021) notes that currently, about 25% of the 30,000 members have not re-registered, possibly due to their inability to resume operations.

To survive in various business situations, Permana et al. (2020) state that the key factor for a company's success is its top management. Gallén (2009) explains that top management, consisting of senior management, plays a significant role in the company's success. Senior management is crucial in directing the overall company and coordinating all core functions so that the company's objectives can be achieved (Gallén, 2009). Currently, the COVID pandemic has ended, but the business processes faced by organizations are no longer the same as before. Business leaders are dealing with a change in the business model compared to the past.

Many researchers agree that effective leadership strategies need to be updated in a rapidly changing environment (Senge, 2017). The ability to adapt to change effectively requires leadership behaviors aligned with the organization's work, known as transformational leadership (Gopal et al., 2014). Recently, the concept of transformational leadership has gained interest among researchers as it has become a fundamental element in modern organizations.

Transformational leadership refers to the leader's attitude to create new ideas and perspectives to develop various strategies for growth (Bedi et al., 2016). By fostering commitment, enthusiasm, and loyalty among managers and staff, they mobilize organization members to make fundamental changes. As a result, the organization becomes ready and capable of moving in a new direction to achieve higher levels of ideal performance (Mirkamali, Thani, & Alami, 2011). In the post-pandemic era, the concept of transformational leadership is highly relevant to the concept of digitalization.

There is a convention that in the post-COVID-19 era, the economy and businesses must undergo rapid digitalization processes (Soto-Acosta, 2020). Digitalization, in simple terms, refers to the impact of digital technology on the economy and businesses, such as the Internet, mobile connectivity, cloud computing, big data, machine learning, artificial intelligence (AI), blockchain, Internet of Things (IoT), robotics, predictive analytics, and other emerging digital technologies. In this context, digitalization refers to transforming interactions, communications, business activities, and business models into a more digital format. Therefore, a digital company is an organization that manages significant business processes and stakeholder relationships (such as suppliers, customers, employees, and business partners) partially or entirely through digital means (Dethine et al., 2019; Soto-Acosta, 2020). In the post-COVID-19 era, there has been a widespread and dramatic digital transformation within society (Iivari et al., 2020).

On the other hand, it has been acknowledged by experts that Total Quality Management (TQM) is the most popular strategy that helps companies, both small and large, to create and maintain a competitive advantage (Aliyu, 2016) and, of course, performance (Aliyu, 2016; Pambreni et al., 2019; Panuwatwanich & Nguyen, 2017; Singh et al., 2018; Yunis et al., 2013). From the exploration of the literature, no research has been found that tests the ability of TQM together with digital capabilities to create performance in the construction industry in the post-COVID-19 era.

This research attempts to examine digital capabilities and the implementation of TQM to create business performance in the manufacturing industry in the post-COVID era, with transformational leadership as a catalyst. This research is important to conduct because, apart from transformational leadership as an important subject that continues to be researched by scholars (Banks et al., 2016; Caldwell et al., 2012; Groves & LaRocca, 2011), the business situation, filled with uncertainty and drastic change, requires both digitalization (Dethine et al., 2020; Iivari et al., 2020; Soto-Acosta, 2020) and TQM at the same time.

Based on this explanation, the question arises, what is the influence of transformational leadership on construction services business performance through TQM and digital capabilities in the post-Covid-19 era? This research aims to analyze the influence of transformational leadership on construction services business performance through TQM and digital capabilities in the post-Covid-19 era.

Literature Review and Hypothesis

Transformational leadership

In the literature review on leadership of an ever-changing business organizations, the study of transformational leadership has come to the forefront (Copeland, 2014; Stewart, 2006). A transformational leader views a business organization as an entity to use

persuasion and motivation, encourage, convince and ultimately drive change (Diaz, 2016; Rusch & Brunner, 2013; Schein, 2017). It is done by inspiring, motivating, finding growth opportunities, improving effectiveness, and guiding organizations with higher values and ideals set out as the long-term vision of the organization (Acharya & Anand, 2020; Dulewicz & Higgs, 2005).

A transformational leader induces change throughout the organization and creates a new perspective for managers and staff (Bono & Judge, 2004). Transformational leaders encourage subordinates to develop potentials beyond their aspirations for the good of business organizations (Kusdi et al., 2018). Transformational leadership consists of 4 main dimensions namely the influence of ideal influence, inspirational motivation, intellectual stimulation, and personal considerations (Hoffmeister et al., 2014).

Idealized influence is a concept in which a leader sets an example for his followers with friendly and charismatic behavior. They admire, respect, and trust their followers. They pay more attention to the needs of their followers than their own and avoid the use of power for personal gain (Bono & Judge, 2004; Hoffmeister et al., 2014; Mirkamali et al., 2011).

Inspirational motivation is a concept that emphasizes efforts to challenge employees in their work and create a clear perspective to achieve goals and lead to the future by improving efficiency in the workplace. Inspirational motivation characterizes the extent to which a leader presents a vision to motivate followers (Bass & Steidlmeier, 1999; Bono & Judge, 2004; Deinert et al., 2015).

Individual consideration is the concept of leader interaction with subordinates that suits their characteristics and abilities. Leaders pay personal attention to individuals to foster healthy relationships by providing new learning opportunities according to their interests and skills.

Individual consideration is also characterized by the extent to which leaders care about the needs of individual followers (Avolio & Bass, 1995; Hoffmeister et al., 2014; Gopal et al., 2014).

1. Digital Capability

According to experts, digitalization is a thorough and transformational concept (Bounfour, 2016; Rogers, 2017) that influences most organizations (Jansson, 2013), and is considered a major challenge for managers and top leaders (Westerman, 2016). Digital capability illustrates an organization's ability to implement digital solutions based on information technology to handle the process of digitalization to be able to operate, maintain, and advance digital solutions/Information Technology (IT) (Wiesböck & Hess, 2018).

Parida et al. (2016) broadly define IT capability as the company's ability to use IT functions and applications in business activities, such as using e-mail, websites, e-commerce, web conferences, intranets, extranets, and other IT applications including social media. More specifically, it is defined as the company's ability to use a variety of technologies to bring the company closer to consumers so that the company's performance improves (Wang, 2020). In a digital context, digital capability can be defined as the skills, talents, and expertise of the company to run digital technology to achieve the company's performance (Kerti et al., 2019).

The results of the literature review on digital capability explain that it includes the process of using, maintaining, and advancement of digital solutions that requires the ability to use digital tools, combine digital and physical resources, and in general manage IT functions namely, IT planning, IT design, IT budgeting, and IT Management (Bharadwaj et al., 1999; Mithas et al., 2011; Wang, 2020; Wiesböck & Hess, 2018). From the literature review, the key aspects (dimensions) of digital capability are identified that includes; (1) IT infrastructure flexibility; (2) IT integration; (3) IT business alignment; (4) IT management (Bharadwaj, 2000; Lyver & Lu, 2018a; Sabherwal, 1999; Sambamurthy et al., 2003).

This research refers to the dimensions of IT capability proposed by Qosasi et al. (2019) namely information technology infrastructure/facilities, information technology management (IT) capability, and proactive information technology (IT). The research was conducted to specifically analyze IT Capability to the performance of small and medium-sized companies in Indonesia that are proved significant (Qosasi et al., 2019).

2. Transformational Leadership and Digital Capability

Transformational leadership affects digital capability, as leaders are required to inspire teams to do their best. Based on literature reviews up to this point on the relationship between transformational leadership and digital capability, there has been little study on how transformational leaders can help companies to develop digital capability (Abi & Arief, 2017). Leaders are important in this approach, as they are the key decision-makers and shape the future of the business. The role is adopted by the leaders who then establish business innovation and digital adoption (Wang, 2020). The current pandemic situation has made various business and economic sectors accelerate the process of digitization (Acosta, 2020).

In research on the new concept of leadership in the digital age, Sahyaja and Sekhara (2018) stated that successful leaders will have and practice quality digital intelligence; adapt quickly and transform their companies by incorporating information technology capability into the organization's DNA. In previous research, there is strong evidence that transformational leaders are accelerating digitalization (Abi & Arief, 2017; Sahyaja & Sekhara, 2018; Sow & Aborbie, 2018) or digital capability in the context of this research. So, we hypothesize:

H1: Transformational leadership has a significant impact on digital capability

3. Business Performance

The company's performance is a multidimensional concept. The company's performance describes a complete view of a company's condition over time, which is the result or achievement of the company's operational activities in utilizing its resources (Schönborn, 2010). The performance of a business organization is one of the indicators that measure how well a business organization achieves its goals (Permana et al., 2020). In the 1950s, the performance view was still modest especially regarding the effectiveness of an organization, which means that optimal performance was achieved when the actual results matched the intended results (Valmohammadi & Roshanzamir, 2015).

As the complexity of the business environment has risen over the decades, the dimensions of viewpoint on the performance term are expanding. Senior executives realize that traditional financial accounting measures such as return on investment and earnings per share can provide misleading signals for continuous improvement and innovation (Kaplan, 2009). The need to adopt various measures of balanced financial and non-financial performance is now widely accepted (Sneyd & Rowley, 2004). Experts have previously presented measures of performance based on finance and non-financial performance (Aliyu, 2016; Kaplan, 2009; Sneyd & Rowley, 2004; Valmohammadi & Roshanzamir, 2015). In this study, we adopted business performance based on dimensions recommended by Valmohammadi & Ahmadi (2015) arguing that the dimension measures the improvement of business organization in all major areas, namely; product and process outcomes, customer-focused outcomes, workforce-focused outcomes, leadership, and governance outcomes, and financial and market outcomes.

4. Digital capability and performance

Undoubtedly, one approach that focuses on improving the performance of business organizations is digital capability. Technological capability and skills are important resources needed to achieve performance (Yunis et al., 2017).

IT capability is needed for companies to be able to customize, integrate, reconfigure and recreate internal and external competencies to achieve performance in an ever-changing business environment (Parida & Örtqvist, 2015). The definition is in line with the result results of Lyver and Lu (2018) who stated that IT capability affects sustainable performance. Bharadwaj's research (2000) proved that companies that adopt IT outperform the performance of companies that do not adopt IT from both financial and non-financial aspects. Digital capability is an important requirement to dominate the market that leads to the company's performance. Based on these exposures, we propose research hypothesis:

H2: Digital Capability has a significant impact on business performance

5. Transformational leadership and company performance

To deal with the uncertain environment and sustainable change, transformational leadership is urgently needed to keep the company's performance (Gopal et al., 2014). The importance of transformational leadership in achieving performance has been emphasized by the fact that the continuous changes in the business environment need new approaches (Zhu et al., 2011). Transformational leadership refers to the attitude of leaders who seek to create new ideas and perspectives to create a variety of strategies so that organizations are ready and can move in new directions to reach the peak of higher ideal performance (Mirkamali et al., 2011).

The influence of the transformational leadership style on performance lies in its principle that aims and motivates employees to do better than what can be done, in other words, the leadership can raise employee confidence which will later affect the improvement of the company's performance. The fundamental responsibility of transformational leadership is to improve moral values, work capacity and ultimately improve organizational performance (Dvir et al., 2002).

Based on the literature review, we propose the hypothesis:

H3: Transformational Leadership affects the company's performance.

6. Total Quality Management (TQM)

The literature review explains that the development of TQM is based on the case studies and the views of recognized experts (Porter, 1996). The general term of Total Quality Management (TQM) is used to define a large collection of philosophies, concepts, methods, and tools that are now used around the world to manage the quality of products/services (Fields & Roman, 2010; Valmohammadi & Roshanzamir, 2015). Both manufacturing and service companies can successfully adopt TQM (López et al., 2009).

Various definitions have been given by researchers and TQM practitioners. For example (Porter & Tanner, 2012) defines TQM as a business process that focuses on improving the effectiveness, efficiency, and responsiveness of organizations to customer needs by actively engaging people in process improvement activities. Valmohammadi and Roshanzamir (2015) notes a more detailed definition by stating that TQM is an integrated management philosophy and set of practices that emphasize, among other things, continuous improvement, meeting customer requirements, reducing rework, long-term thinking, increased engagement of employee and team, redesign process, competitive benchmarking, team-based problem solving, constant measurement results, and closer relationships with suppliers.

Several studies have tried to synthesize extensive TQM literature and identify the practice of TQM with several key elements (among others Ahire & Golhar, 1996; Das et al., 2008; Fields & Roman, 2010; Lagrosen et al., 2012; Rachbini, 2019; Sila & Ebrahimpour, 2002; Valmohammadi, 2011). This research refers to the construction of TQM developed by Das et al. (2008), which consists of (1) Top management commitments (2) Continuous improvement (3) Innovation (4) Comparative

studies (5) Employee engagement (6) Training (7) Customer focus (8) Supplier quality management (9) Incentives and rewards. The consideration is that the research explicitly tests the validity and reliability of TQM constructs. TQM constructs resulted from the research of Das et al. (2008), also includes TQM constructs (Aliyu, 2016), as well as recent studies using TQM constructs (e.g. Rumman et al., 2021; Othman et al., 2019; Usman et al., 2020). Recently, these factors have also been the most frequently mentioned based on a literature review of TQM conducted in various countries (Wawak et al., 2020).

7. Transformational leadership affects TQM

Researchers have previously explored the conceptual relationship between transformational leadership and TQM. There is some kind of agreement that TQM practices will improve the company's performance. Moreover, the practice of TQM by transformational leadership will give birth to world-class companies for similar companies (Trofino, 2000). TQM experts such as Deming, Crosby, and Juran recognize the important role of leadership in quality management (Bouranta, 2020). Further analysis of the literature review concluded that transformational leadership has a significant positive influence on all TQM practices (Kumar & Sharma, 2018).

The principle of transformational leadership is in line with TQM's philosophy, which emphasizes continuous improvement and customer satisfaction, encourages change, sets clear and challenging goals, and encourages teamwork (Othman et al., 2019; Rui et al., 2010). Transformational leadership explains visionary leadership to strengthen the commitment to quality, inspire employees to have high expectations, and with this principle a transformational leader can transform his organization into a qualified one by following an effective QM program (Rumman et al., 2021; Argia & Ismail, 2013; Bouranta, 2020; Trofino, 2000; Usman et al., 2020). Based on the literature review, we propose the following hypothesis:

H4: Transformational leadership has a significant impact on TQM

8. TQM and performance.

The implementation of TQM is believed to improve the company's performance. Some studies have shown a positive relationship between TQM implementation and performance (Singh et al., 2018). Besides, many empirical studies measure business performance by TQM criteria (Fields & Roman, 2010; Mantysaari, 2019; Sila & Ebrahimpour, 2002; Usman et al., 2020; Yunis et al., 2013). If the TQM plan is implemented correctly, it will have an impact on a variety of areas including understanding customer needs, improving customer satisfaction, improving internal communication, better problem solving and fewer errors (Valmohammadi, 2011).

Gadenne and Sharma (2009) reported that TQM had a positive relationship with the performance of small and medium-sized businesses in Taiwan, i.e. the integration of TQM philosophy and dimensions positively affects cost reduction and improves business performance. The same result was conveyed by Ayyagari et al. (2011) that there is a strong positive relationship between TQM practices and non-financial performance of SMEs, while there is only a weak influence of TQM practices on the financial performance of SMEs. Many authors have suggested that TQM practices can have a positive impact on the company's performance including customer satisfaction (Choi & Eboch, 1998), innovation (Lestari et al., 2013), financial performance (Douglas & Judge, 2001; Gharakhani et al., 2013), operation (Yunis et al., 2013).

The results of the literature review prove that there has been no study that specifically analyzes the relationship between TQM and performance in the manufacturing industry in Indonesia. On that basis, due to the necessity to conduct a study as a conceptual foothold for business practitioners, the author proposes a hypothesis:

H5: TQM has a significant impact on business performance

Research Methodology

1. Conceptual Framework

Based on the library research, the relationship between the research variables is proposed into three main models (shown in Figures 1, 2, and 3). Figure 1, explaining the digital capability model that mediates the transformational relationship of leadership to performance without TQM. Figure 2, explaining the TQM Model that mediates the transformational relationship of leadership to performance without digital capability. We compared two models which explain the relationship between transformational leadership on the performance as well as the integration of the two models to determine more powerful variables mediating between transformational leadership and construction business performance.

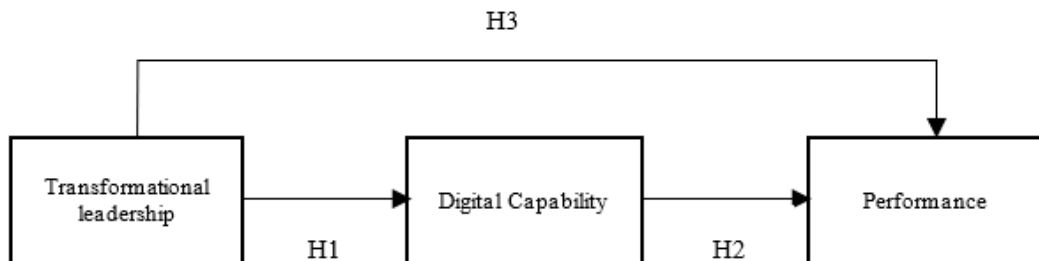


Figure 1.

The Conceptual Framework Of Digital Capability Mediates The Transformational Relationship Of Leadership To Performance Without Tqm (scenario 1).

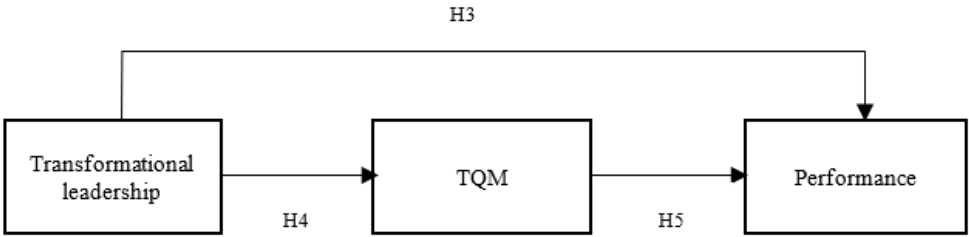


Figure 2.
The Conceptual Framework Of Tqm Mediates The Transformational Leadership Relationship To Performance Without Digital Capability (scenario 2).

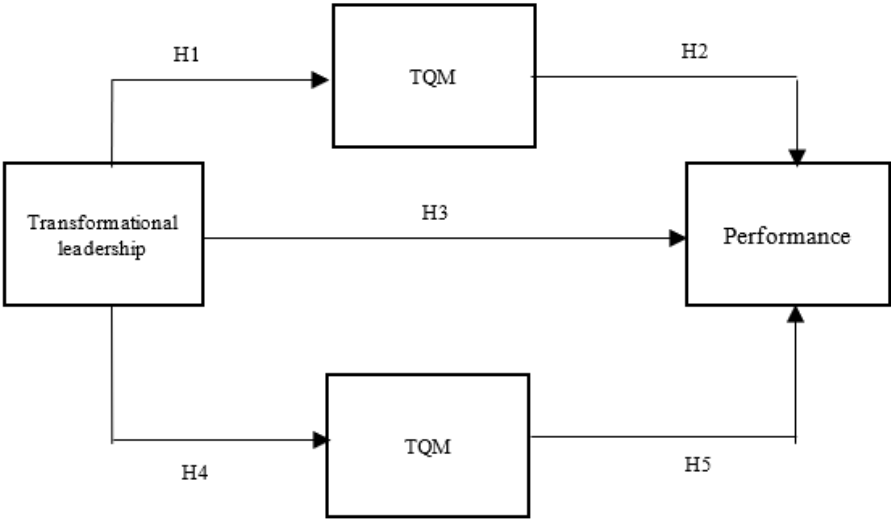


Figure 3.
The Conceptual Framework Of Digital Capability Together With Tqm Mediates Transformational Leadership Relationships To Performance (scenario 3).

1. Measurement of Research Variables

This study measures variables by referring to the dimensions proposed by previous researchers; transformational leadership refers to (Avolio & Bass, 1995; Hoffmeister et al., 2014; Gopal et al., 2014) namely Individual consideration, Intellectual stimulation, Inspirational motivation, and Idealized influence. Researchers derived the dimensions into 19 items of research questions. Digital capability refers to (Lyver & Lu, 2018b; Qosasi et al., 2019a) namely IT Infrastructure, Capability of Management of IT, and Proactive IT.

The study derived the capability into 18 question items. TQM variables refer to (Das et al., 2008) namely Top management commitment, Continuous improvement, Innovation, Comparative study, Employee Engagement, Training, Customer focus, Supplier quality management, and Incentives and awards. This study turned the nine dimensions into 29 question items. Meanwhile, performance variables refer to Valmohammadi and Roshanzamir (2015) namely Product and process outcomes, Customer-focused outcomes, Workforce-focused outcomes, leadership and governance outcomes, and Financial and market outcomes.

This study derived the five dimensions to 15 question items. So, the total number of question items in this study is 81 items. All questionnaires written in the Indonesian language were shared using digital applications. Scale measurement used Likert scale: 1 = Strongly Disagree; 2 = Disagree; 3 = Undecided; 4 = Agree and 5 = Strongly Agree (Joshi et al., 2015; Malhotra, 2006).

2. Research Respondents

Respondents to this study were the leaders of construction services companies in Jakarta, the capital of Indonesia with 100 total real respondents. Referring to the experts' opinion, 100 respondents deserved to be used as samples of quantitative research (Augusty, 2006). Sekaran & Bougie (2016) proposed a practical rule that for most studies that the sample size ranges from 30 respondents to 500 respondents. The number is in line with Chin et al. (2016) who stated that the statistic test using Structural Equation Model (SEM) and Partial Least Square (PLS) with 100 respondents is worth using.

SEM-PLS can be used to perform confirmatory analysis (Ringle et al., 2005). Confirmatory Factor Analysis (CFA) is a statistical technique used to find the construct form of a set of manifest variables, or test a variable on the assumption of the manifest that constructs it (Ghozali, 2014). Consideration to use SmartPLS is that SmartPLS has been developed based on modeling and bootstrap paths, and recommended by Tenenhaus & Esposito (2005). The research model developed is a reflective model whose purpose is data analysis, in which researchers can further confirm its analysis results based on the theory that has been built.

Results and Discussion

1. Research Results

Respondents' profiles by gender were dominated by men (79%) compared to women (21%). Based on the size of the company respondents research dominated medium

enterprises (51%), small (25%), and large companies became the least involved in the research (24%). The classification of company size refers to the Law of the Republic of Indonesia No. 20 of 2008 on MSMEs; in which small businesses have wealth above 50 million rupiahs to 500 million rupiahs. Medium-sized businesses have wealth of above 500 million rupiahs to 10 billion rupiahs. Large businesses have a wealth above 10 billion (Law No. 20 of 2008). Respondents by age were dominated from ages 51 to 60 (49%), next ages 41 to 50 y/o (35%), > ages 60 y/o (7%), ages 31 to 40 y/o (6%) and ages < 30 years y/o (3%). Based on the age of the company, classification is divided into <5 years (13%), 5 to 10 years (25%), 11 to 15 years (36%), and >15 years (26%). Based on ISO standards, respondents were dominated by companies that do not yet have ISO standards i.e. (64%) than those with ISO standards (36%).

2. Conformity of research model test

Analysis of the suitability of SEM with PLS research model is conducted in three stages, namely outer model analysis, inner model analysis, and hypothesis testing (Chin, 1998).

Outer model analysis

Reflective models are measured by loading indicators (> 0.5); Cronbach's alpha (> 0.6); composite reliability with a value (> 0.7); Average Variance Extracted (AVE) (> 0.5) and Criteria Fornell-Larcker ($AVE > R^2$) (Tenenhaus, 2008). The following presented is the loading value of the entire indicator.

Table 1.
Loading Research Indicators

	Item	Sample Origin	Sample Mean	Standard Deviation	T Statistic	P Value
Capability_Infrastructure <- Digital Capability	5	0.974	0.974	0.007	140.052	0.000
Capability_management <- Digital Capability	4	0.993	0.993	0.002	566.211	0.000
Proactive <- Digital Capability	4	0.976	0.976	0.006	166.122	0.000
Individual_Consideration <- Transformational Leadership	6	0.970	0.967	0.007	132.523	0.000
Intellectual_Stimulation <- Transformational Leadership	4	0.967	0.967	0.007	145.597	0.000
Motivation_Inspirational <- Transformational Leadership	9	0.973	0.973	0.007	145.597	0.000
Idealized_influence <- Transformational Leadership	5	0.973	0.972	0.006	163.235	0.000
Comparative_study <- TQM	4	0.964	0.963	0.015	65.526	0.000
Customer_Focus <- TQM	3	0.954	0.953	0.012	77.121	0.000
Employee_Engagement <- TQM	3	0.955	0.954	0.010	91.233	0.000
Innovation <- TQM	3	0.966	0.965	0.009	109.378	0.000
Management_SCM <- TQM	3	0.968	0.968	0.007	142.893	0.000
Reward_Incentive <- TQM	3	0.972	0.971	0.007	133.099	0.000
Sustainability_Improvement <- TQM	3	0.974	0.973	0.006	172.504	0.000
Top_Commitment <- TQM	3	0.964	0.964	0.008	121.334	0.000
Training <- TQM	4	0.972	0.972	0.007	143.334	0.000
Product and process outcomes <- Performance	3	0.968	0.967	0.011	84.900	0.000
Customer-focused outcomes <- Performance	3	0.978	0.978	0.006	77.121	0.000
Workforce-focused outcomes <- Performance	3	0.966	0.966	0.008	121.454	0.000
leadership and governance outcomes <- Performance	3	0.985	0.984	0.004	264.569	0.000
Fnancial and market outcomes <- Performance	3	0.967	0.966	0.008	121.163	0.000

Table 1 shows that all research indicators have a factor loading value above the cut-off value (>0.5), so no research dimensions are discarded. To support these results, the

following values are presented: Cronbach's alpha, composite reliability, and AVE along with their respective criteria (> 0.6); (>0.7); (>0.5).

Table 2.
Cronbach's Alpha, Composite Reliability, And AVE

	Cronbach's Alpha	rho_A	Composite reliability	Average Variance Extracted (AVE)
Digital Capability	0.981	0.981	0.987	0.963
Performance	0.986	0.986	0.989	0.946
TQM	0.991	0.991	0.992	0.932
Transformational Leadership	0.980	0.980	0.985	0.942

Based on the results of running data using SmarPLS software, the suitability of the research model which meets the criteria required by outer model smart PLS namely Cronbach's alpha; composite reliability; and

AVE produce each has a value of > 0.60 (Cheung & Rensvold, 2002). To complete the results, the following Criteria Fornell-Larcker ($AVE > R^2$) are presented.

Table 3.
Criteria for Fornell-Larcker ($AVE > R^2$)

	Average Variance Extracted (AVE)	R Square	Adjusted R Square
Transformational Leadership	0.942		
Digital Capability	0.963	0.946	0.945
Performance	0.946	0.958	0.957
TQM	0.932	0.920	0.919

Table 3 shows that the AVE values of digital capability, TQM, and performance variables are higher than that of the R Square values; therefore, Fornell-larcker criteria are met. Thus, the outer test of the research model shows all criteria are met and feasible.

Inner Model Analysis

Analysis of the inner model can be seen from several indicators that include Coefficient of Determination (R^2); Predictive Relevance (Q^2);

and Goodness of Fit Index (GoF) (Chin, 1998).

The presented table is the calculation of each indicator.

1. Coefficient of Determination (R^2)
The following table presented is the value of R^2 smartPLS software output

Table 4.
Value of R^2

	R Square	Adjusted R Square
Digital Capability	0.946	0.945
Performance	0.958	0.957
TQM	0.920	0.919

According to Chin (1998) the R square value of 0.67 as strong, 0.67 as substantial, and 0.19 as weak, while Sarwono (2010) added an R^2 value > 0.7 as strong. Then all variables involved in this study are categorized as having a strong relationship.

2. Predictive Relevance (Q^2)

To calculate Q^2 , a formula can be used

$$Q^2 = 1 - (1 - R_1^2)(1 - R_2^2) \dots (1 - R_n^2)$$

$$Q^2 = 1 - ((1 - 0.945)(1 - 0.957)(1 - 0.919))$$

$$Q^2 = 0.999$$

This test is conducted to determine the predictive capability with the blindfolding procedure. According to Chin (1998) if the value obtained is between 0.02 and 0.15, the model has little predictability. If the value obtained is between 0.15 and 0.35, the model has the medium predictive capability. If the value obtained is above 0.35, the model has high predictability. Calculation of Q^2 value obtained a result of 0.99. Thus, the model has high predictive relevance.

3. Goodness of Fit Index (GoF)

GoF values in SEM with PLS are calculated manually (Tenenhaus (2004) with the formula

$$GoF = \sqrt{x}$$

$$GoF = 0.917$$

Tenenhaus and Esposito (2005) formulated that the GoF value of 0.1 as small, 0.25 as medium, and 0.38 as large. This study proves that the calculation of the GoF value is 0.94. Therefore, it is concluded that the research model can capture the real phenomenon of transformational leadership influence on the performance of Construction Services businesses through digital capability. Thus, the inner model test proves that all criteria of the research results meet the relevant criteria.

Research Hypothesis Testing

Structural models in SEM with PLS are done by bootstrapping processes that generate t-statistical values. To know how much influence between variables, the values of loading factor from the original sample (O) output are used. In this research, hypothesis testing was conducted on three scenarios of the research model:

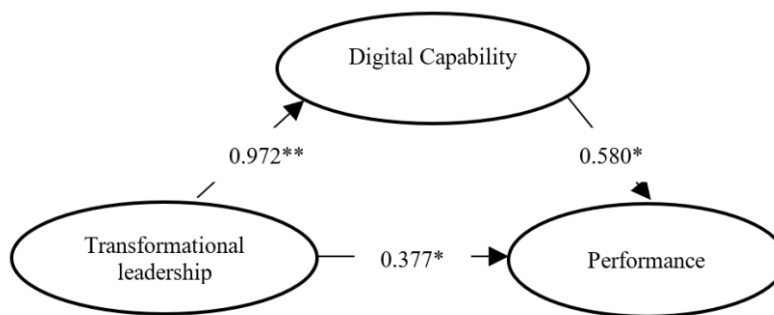


Figure 4.

Transformational Leadership Models, Digital Capability and performance without TQM; *significant 5%, ** significant 1% (Scenario 1).

Figure 4 shows scenario 1 namely the effects of transformational leadership on performance through digital capability without TQM. The results of the statistics showed that there was a greater indirect influence (0.564) than the direct influence (0.377).

That is, there is a digital capability contribution that mediates the relationship between transformational leadership to performance. In this case, it is not full mediation, because the effects of transformational leadership on performance are also significant.

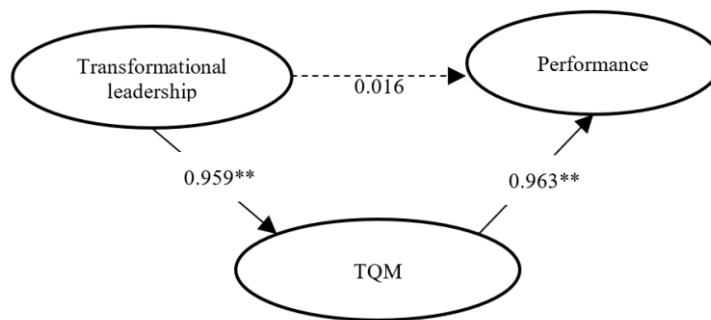


Figure 5.
Transformational Leadership Model, TQM, and Performance Without Digital Capability; ** significant 1% (Scenario 2).

Figure 5 shows scenario 2 testing the effects of transformational leadership on performance through TQM without digital capability. The results of the statistic calculation showed an indirect influence (0,940), while direct influence was insignificant (0,016).

This means that if it does not involve digital capability, TQM fully mediates the relationship between transformational leadership and performance. Directly, there is no influence between transformational leadership and performance.

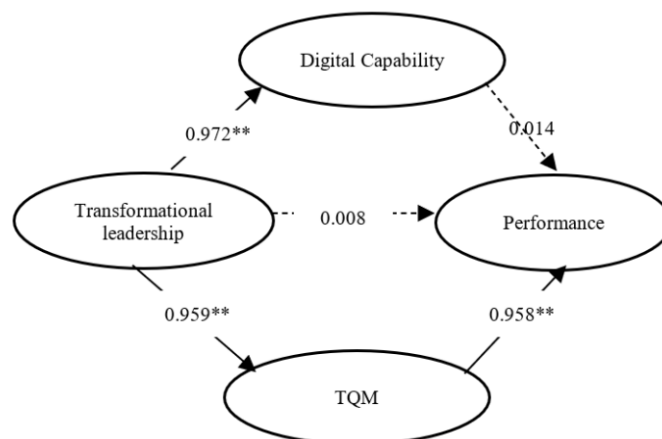


Figure 6.
Transformational Leadership Model, TQM digital capability and performance; ** significant 1% (Scenario 3).

Figure 6 shows scenario 3 testing the effects of transformational leadership on performance through TQM together with digital capability. Statistic calculation results showed significant influence through TQM (0.918), while there was an insignificant influence through digital capability (0.013) and direct influence (0.008) which was also insignificant. This means that TQM fully mediates the relationship between transformational leadership to the performance of Construction Services

Businesses even though it involves digital capability during the pandemic.

Discussion

This study aims to enhance the performance of construction service companies in the post-COVID-19 era by analyzing the model of transformational leadership mediated by digital capabilities and Total Quality Management (TQM). The research results demonstrate that TQM fully mediates the

relationship between transformational leadership and the performance of construction service companies, even when the company's operations involve digital capabilities. Digital capabilities have an impact on business performance when not involving TQM (scenario 1). Based on these research findings, several key points can be summarized.

First, the research reveals that construction service companies must exercise caution in the post-COVID-19 era. While the pandemic indeed led to a significant increase in digital capabilities (Iivari et al., 2020), even urging various business sectors to undergo rapid digital transformation (Soto-Acosta, 2020), this does not hold true for the construction sector in the post-COVID-19 era. In the post-COVID-19 era, the construction sector still relies on TQM as its primary foundation.

It is acknowledged that during the pandemic, digital media involvement increased in business processes due to policies such as work from home (WFH), involving digital media in meetings with stakeholders (suppliers, service users, employees, and business partners). However, this no longer applies in the post-COVID-19 era. This is attributed to the nature of the construction business, especially in developing countries, which emphasizes physical work to produce goods and services, such as road construction, infrastructure, clean water, and electricity networks, which also create job opportunities for the population (Boadu et al., 2020). In developing countries like Indonesia, the construction industry is a crucial source of employment for the unemployed and/or unskilled labor. The Central Statistics Agency reported that the construction sector was noted as the sector with the largest increase in the number of workers in Indonesia before the pandemic, totaling 8.14 million workers (BPS, 2019). The actual number may be even higher due to unregistered informal labor.

Second, the research indicates that the majority of construction company leaders are aged between 51 and 60, accounting for 49% of the respondents.

Based on social psychology literature, it is revealed that the age of company leaders influences decision-making perspectives and strategic choices (Yang & Wang, 2014). Older top management tends to take fewer risks and are more reluctant to change, while younger top management is inclined to support risky decisions (Wiersema & Bantel, 2010). Additionally, younger managers are more likely to participate in innovative strategies that lead to company growth (Barker et al., 2001). Digital capabilities and information technology tools are often associated with younger individuals and the behavior inherent in the millennial generation (Moreno et al., 2017). The millennial generation, born between 1980 and 2000 (Lee & Kotler, 2016), currently falls within the age range of 20 to 40 years.

Third, it is undeniable that digitalization has permeated every aspect of life. There is no conference, no new business model, and no public discussion that does not have a reference to "digital" or, in the latest term commonly used, "Innovation 4.0" or "Industry 4.0" (Bican & Brem, 2020). Digitalization is gaining momentum in industry and academia day by day. This is supported by impressive figures: about 39.1 million results on Google for the search term "digital transformation," 818,000 for "digital business models," 311,000 for "digital entrepreneurship," and a total of 7.3 billion results for the search term "digital" (Bican & Brem, 2020).

The implementation of digital technology enhances the speed of decision-making and improves the quality of core business processes, including those in the construction industry. Research results in advanced countries like the USA, Canada, various European countries, and Russia confirm the effectiveness of information technology in construction: it reduces costs by up to 30%, increases profit margins by 15%, improves net income by 25%, and boosts internal returns by 20% (Aleksandrova et al., 2019). The research findings confirm that the digital ecosystem in developing countries like Indonesia is not as

mature as in developed countries (Holvitie et al., 2017), leading to varied impacts of digital capabilities on construction industry business performance. In developed countries, digital technology has become a cultural norm and is integrated into all aspects of life, even from an early age (Iivari et al., 2020). However, in developing countries, the use of digital technology is dominated by consumer needs rather than productive purposes (Katadata, 2020), despite significant digital technology penetration, there are still limitations in technology management, infrastructure, and networks.

Fourth, the reality outlined in point 3 has prompted further research on the potential integration of digital and TQM concepts. Good efforts have been made previously by Ahmed and Sharma (2008), who studied TQM practices in virtual business organizations. Although it was mentioned that the implementation of TQM in virtual organizations is highly complex, the research results showed that business organizations can efficiently deliver goods and services to customers without physical control and with the reduction of numerous business processes and initial low costs. Future research should go beyond the mere implementation of TQM in virtual business organizations but should also focus on integrating the virtual philosophy with the TQM philosophy in a single approach. This will result in a TQM concept with a virtual DNA that can be implemented not only in virtual organizations but also in conventional business organizations such as construction service companies. This concept is highly relevant, and its results are eagerly anticipated, especially in the ongoing pandemic, the exact duration of which remains uncertain.

This research combines transformational leadership, total quality management (TQM), and digital capabilities as factors that mutually influence the performance of construction services businesses. This approach is an innovative alignment between aspects of leadership, management quality and digital technology.

This research provides a framework that can be used by construction services companies to improve their business performance through a combination of transformational leadership, TQM, and digital capabilities. So the research results can encourage wider digital adoption in the construction industry. This is important to face changes in market demand, increase productivity, and create sustainable competitiveness.

Limitation, Conclusion, And Future Research

The limitation of this research is in terms of regional restrictions conducted in Jakarta, the capital city of Indonesia, future studies need to be conducted in major cities in various parts of the world considering the pandemic impacts of Construction Services Businesses around the world. Jakarta was chosen as the research location because the majority of the headquarters of Indonesia's construction industry are located in the city. The object of this study is all types of businesses that exist in the construction industry, while in the future it will be interesting if a similar study is held on a more specific locus, for example, the study of the pandemic impacts on building construction, Civil Engineer, mechanical and electrical installations, etc. to become a separate study. Similarly, a more in-depth study should be conducted on the impacts of TQM on organizational quality, process quality, and result quality (Wawak et al., 2020). And last but not least is the need to conduct studies with the same focus but with the comparison between construction service companies with ISO and without ISO, since it is believed that ISO implementation can overcome various construction problems such as low-quality construction materials, building damage, construction delays, high accident rates, and environmental impact problems, that many contractors have started ISO certification (Keng et al., 2016; Willar et al., 2015).

This research develops a theoretical framework that can guide the practice of transformational leadership of construction service efforts to continue assessing performance during the post- Covid-19

pandemic with the digital capability and TQM as mediation. The results show that the research conceptual framework can explain the relationship between transformational leadership, digital capability, TQM, and construction business performance. Facts of the research show that there is a significant influence of transformational leadership on business performance if it is carried out through TQM. From statistical calculations, a direct influence of transformational leadership on the company's performance is insignificant either directly or indirectly through digital capability. That is, TQM has a full mediation effect on the influence of transformational leadership on the company's performance during the pandemic. Thus, the TQM approach becomes an increasingly important strategy to run a construction business in the future. The results of this study can be used as a reference for Construction Services Businesses to practice TQM more actively.

However, the reality of today's digital age shows that the use of digital media is increasingly entering the whole lifeline including in the Construction Services Business. Construction service companies are proven to utilize digital media as a support in business processes. This study has conducted a study of digital capability and TQM into its separate variables.

The results can encourage wider digital adoption in the construction industry. This is important to face changes in market demand, increase productivity, and create performance. Therefore, in the future, it is necessary to research digital capability with TQM to become integrated variables. Although studies leading to virtual TQM had been conducted (For example, Ahmed & Sharma, 2008; Baglieri & Consoli, 2009; Casadesús et al., 2005; Rashid et al., 2011), the study was not conducted during the Covid-19 pandemic. So, it does not answer business problems during the post Covid-19 pandemic, especially the problems of Construction Services Business.

Declarations

Author contribution

All authors contributed equally as the main contributors of this paper. All authors read and approved the final paper.

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Competing interest

The authors declare that they have no conflicts of interest to report regarding the present study

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