



International Journal of Project Organisation and Management

ISSN online: 1740-2905 - ISSN print: 1740-2891

<https://www.inderscience.com/ijpom>

Moderation effect of flexibility in projects on senior management commitment in achieving success in financial services IT projects

Pankaj Tiwari, B. Suresha

DOI: [10.1504/IJPOM.2023.10054372](https://doi.org/10.1504/IJPOM.2023.10054372)

Article History:

Received:	05 April 2021
Last revised:	29 July 2021
Accepted:	01 August 2021
Published online:	07 March 2023

Moderation effect of flexibility in projects on senior management commitment in achieving success in financial services IT projects

Pankaj Tiwari* and B. Suresha

School of Business and Management,
CHRIST (Deemed to be University),
Bengaluru, 560029, India

Email: adatiya.pankaj@gmail.com

Email: pankaj.tiwari@res.christuniversity.in

Email: suresh.b@christuniversity.in

*Corresponding author

Abstract: Senior management commitment and flexibility improve project responsiveness to volatile and high-impact scenarios, especially in large projects and programs. The aim of this study is to determine how project flexibility interacts with and affects the relationship between senior management commitment and success in IT projects. A cross-sectional survey of 166 managers was used to derive empirical data from the financial services industry and used to test the conceptual framework based on recent project management literature. Ordinal regression analysis demonstrated a significant relationship between senior management commitment and success in projects which is influenced by significantly positive moderations established through flexibility in projects. The study findings can assist project managers and senior leaders to accomplish their short-term and long-term project goals and achieve success in projects by reducing the chances of failures. This paper adds value to existing research in the context of IT projects and the role of project flexibility on their performance.

Keywords: business success; financial services; IT projects; project flexibility; project performance; project size; project success; risk mitigation; senior management commitment.

Reference to this paper should be made as follows: Tiwari, P. and Suresha, B. (2023) 'Moderation effect of flexibility in projects on senior management commitment in achieving success in financial services IT projects', *Int. J. Project Organisation and Management*, Vol. 15, No. 1, pp.77–98.

Biographical notes: Pankaj Tiwari is a Project Management Professional and PhD Research Scholar in the School of Business and Management at Christ (Deemed to be University), Bengaluru, India. Her research interests include project portfolio management, project management, stakeholder management, and strategic management, especially in the health care and financial services domains. She holds an Electronics Engineering, Masters in Business Administration (Operations Research), and Masters in Philosophy (Project Management). Her work appears in various journals and project management conferences.

B. Suresha is an avid professor by choice specialised in accounting, finance, and capital market domain with a sheer determination and willingness to take up challenges and drive towards excellence and service in higher education. Currently, he is working as an Associate Professor in Finance and a Program Coordinator of Master of Business Administration (Finance Management) at CHRIST (Deemed to be University). He holds a Masters in Commerce, Masters in Business Administration, and Doctorate in Management. He has published several research articles in national and international refereed journals and has participated in technical workshops, research conclaves, and national and international conferences.

This paper is a revised and expanded version of a paper entitled 'Moderating role of project flexibility between top management commitment and project success in financial services' presented at ICCBP2021, MDI Murshidabad, India, 21 March 2021.

1 Introduction

With the growing attention toward management of projects and related discipline in a dynamic environment, there is ambiguity regarding various project roles and misconceptions about success in projects (Zwikael, 2016). The dynamic environment offers several opportunities and difficulties in executing projects successfully and sustain in long term. The overall success, in general, is dependent on the capabilities of the managers to handle various projects and the way project schedule is used considering the overall project budget (Raziq et al., 2018). A project that fulfils the project requirement and performs as expected is considered effective. The commitment from senior management supports project managers to take appropriate decisions to achieve expected project targets (Shao, 2018; Zwikael and Meredith, 2018).

Project-based organisations consider success in projects as prime goal and continue to focus on project management. Empirical-based research especially in project management are proliferated with studies conducted on key factors (Vrchota et al., 2021; Nunes and Abreu, 2020; Garousi et al., 2019; Frefer et al., 2018; Ahimbisibwe et al., 2015; Costantino et al., 2015; Yirenkyi-Fianko et al., 2012; Müller and Turner, 2007; Nguyen and Ogunlana, 2004) and consider only triple constraints such as project cost, quality, and time (Yamin and Sim, 2016). Senior leaders managing projects are always considered to be responsible to manage project groups' performance and accomplishment of the project specific goals. As organisations consistently face failures in projects, the project failure or success is deemed completely dependent on the senior leaders (Zaman et al., 2019).

In competitive and dynamic settings, IT projects in financial services sector serve as enablers to offer services such as payments processing systems, financial risk assessment, and asset management systems. However, it is difficult for financial services to sustain with flexible processes, carry out stakeholder negotiations, be responsive to risk, and emphasise on advanced technological projects; while increasing the likelihood of overall success. Senior leadership face several challenges to overcome and meet complex project requirements to achieve overall success (Montoya, 2016). A higher focus on sustenance, improving productivity and responding promptly to market conditions while having control over cost are some of the complexities the senior leadership need to deal with.

The effect of senior leadership on the success of the organisations is broadly recognised; however, the role of senior management needs to be applied and considered as the key factor. Senior management commitment relates to active participation and project selection to achieve strategic goals (Kaupa and Naude, 2021; Khattak and Shah, 2020; Hermano and Martín-Cruz, 2016; Berssaneti and Carvalho, 2015; Rodríguez et al., 2008). Various factors result in project success and these should get addressed by senior management. Senior management can easily manage budget and schedules related issues. The expected benefits from a project and overall scope are very important parameters to be managed because the benefits closely relate to the project's justification and funding (Aga et al., 2016). Senior management facilitates interventions in project team building through constant communication, engagement, rewards, and recognition (Raziq et al., 2018). More studies on senior leadership are required in the literature of project management as most of the projects fail due to lack of senior management commitment and support (Malagueño et al., 2021).

Several studies have been conducted to determine their influence on the success of projects by considering behavioural mediators (Naeem and Khanzada, 2017; Yang et al., 2012). Also, studies observed that project risk management should remain the prime considerations while managing projects to improve project performance and to achieve organisational efficiency (Teller et al., 2014; Müller and Jugdev, 2012; Garcia-Crespo et al., 2009). Studies recommended various risk mitigation strategies to reduce delays in business operations (Nguyen and Mohamed, 2021; Gunduz et al., 2013). The effectiveness and the moderating nature of such recommended strategies (especially project flexibility) to mitigate IT project risks has not been empirically examined (Zailani et al., 2016; Haseeb et al., 2011).

This paper aims to examine the substantial effects of senior management commitment on the success of projects by introducing project flexibility as a precautionary project risk mitigation strategy in dynamic settings (Zaman et al., 2019, Olsson, 2008). Prior studies also recommended having empirical research work on project flexibility (Zailani et al., 2016). Hence, posed general research questions:

- RQ1 How is success in projects influenced by commitment of the senior management and project flexibility?
- RQ2 How does project flexibility impact the association between senior management commitment and the success of projects?

This study offers crucial insights to project management professionals by answering the desired research questions. Firstly, by considering various organisational theories such as upper echelon theory and contingency theory, this study lays out the different management roles and expertise needed to achieve success in projects. Secondly, it offers insights into the managerial capabilities and project attributes that should be considered in dynamic settings. Finally, by showing how to customise project management approaches to suit different environments and minimise risk, this study adds value to project-based literature and to organisations.

2 Review of literature

2.1 Background

With globalisation and digitalisation as key enablers, organisations are aiming for technology-based digital transformation (Parida et al., 2015). Financial services organisations back in the 1990s have digitised business processes to create new financial services and products resulting in the availability of different offline and web-based channels. However, with increasing competition and launch of enhanced financial services and products, organisations need to keep improving and innovating in order to sustain. The financial catastrophe of the late 2000s made the financial market volatile and more challenging in terms of competition (Berry et al., 2010). For decades financial services organisations have focused on enhancements of their service and product offerings. Only a few organisations were able to offer innovative solutions to consumers. Established financial services organisations have found it challenging to use technological advancements in realising new opportunities in business (Tushman and O'Reilly, 1996). Such technology-intensive projects remain contingent on technical competencies to be successful and offer business benefits (Nguyen and Mohamed, 2021; Tiwari and Suresha, 2020). As mentioned previously, studies have been conducted to determine the factors that influence organisational performance as well as success in projects. Constantly, senior management commitment is identified as a key factor in these researches to achieve success in general (Khattak and Shah, 2020; Nunes and Abreu, 2020; Garousi et al., 2019; Frefer et al., 2018; Hermano and Martín-Cruz, 2016; Terlizzi et al., 2016).

2.2 Senior management commitment

Senior management represents the topmost management level (e.g., executive managers) in an organisation. The involvement of senior management is observed in different ways such as commitment, engagement, leadership, oversight, and sustained involvement a project-based environment along with the controlling of the project resources. Having commitment from senior leadership during major changes in project scope, schedules, budget and similar catastrophes help to obtain required resources and approvals. Specially, additional funding, cost allocation, and advanced training funding for process engineering can be managed effortlessly if supported by senior leadership in an organisation (Morkunas et al., 2019; Aiyer et al., 2018; Gomber et al., 2018; Formisano et al., 2016; Hardaway et al., 2016).

Oh and Choi (2020) highlighted the importance of a project team's capabilities in a dynamic business environment to increase business performance. Senior management support encourages managers to set clear project objectives in achieving desired business outcomes and achieve customer satisfaction. Nunes and Abreu (2020) conducted social network analysis in the project management field and found that the dynamic interaction of project people across a project lifecycle influences the success of the project (Herrera et al., 2020). As organisations aim to achieve business success, senior leadership should remain committed to enhancing business processes by taking risks. Garousi et al. (2019) found that the level of support from senior management support is essential for project planning, project controlling and monitoring, and change management across organisation resulting in business success. Costantino et al. (2015) mentioned the

readiness of the senior managers to offer authority and fulfil resource requirements for project success in construction projects helped in executing large projects.

Nguyen and Mohamed (2021), Frefer et al. (2018), Shaul and Tauber (2013), Young and Jordan (2008) and Young and Poon (2013) have also noted that technology-based projects and their successful implementation depends on the intensity and sustained commitment of senior management to a large extent. For example, IT projects very often need business process reengineering, but with no assurance from senior leadership, the roles of internal and external project stakeholders are impacted, which leads to project failures. Visible top management commitment demonstrates other senior managers within the organisation on the criticality of the work to be done in projects, and encourages them to take required appropriate decision, for example, any schedule or budget-related changes required in projects (Fard et al., 2020; Ifinedo and Nahar, 2006; Davenport, 2001).

With no support and involvement of senior management it is difficult to persuade the project managers who run projects in silos when a complex issue arises. Senior management should clarify the rationale behind decisions concerning the projects with great enthusiasm and by applying their experience on project activities to enrich the business outcomes (Boonstra, 2013). A very few studies identify user involvement, support from senior management, project planning, enabled teams and their skills, etc. as significant factors for executing technology-based projects and their success (Boonstra, 2013; Young and Poon, 2013; Sarker and Lee, 2003; Willcocks and Sykes, 2000), but senior management commitment still needs attention (Andersén and Ljungkvist, 2021; Amoako-Gyampah et al., 2018).

2.3 Project success

The rate of failure or success in projects depends on how the stakeholders perceive it (Müller and Jugdev, 2012). It is important to outline the success criteria while defining the preliminary project scope during the initial stages of the project lifecycle (PMI Standards Committee, 2013). Both conceptual, as well as operational perspectives are important in project management (Carvalho and Rabechini, 2017; Wu et al., 2017; Pinto and Pinto, 1991). Success in projects is the combination of schedule, customer satisfaction, quality and cost (Pinto and Pinto, 1991). The three aspects of project success are important because they determine the way overall business, clients, and employees get influenced by the projects, how efficient the project is, and the level of preparation for future opportunities (Carvalho and Rabechini, 2017). On the other hand, success in projects can be seen as the derivative of quality, time, budget, several external controls, user satisfaction, health and safety, and most importantly project's commercial value (Wu et al., 2017). It becomes difficult to measure the performance of the projects due to the presence of multiple stakeholders and goals to accomplish (Zaman et al., 2019). Thus, selecting one predominant goal to represent each project stakeholder becomes challenging (Klijn and Koppenjan, 2016). Thus, the observed performance of projects is regarded as a proxy demonstrating project outcomes.

The project performance is determined using different dimensions such as time, quality, and cost dimensions (Chipulu et al., 2014; Winch, 2014). A closed emphasis on multiple dimensions may restrict the expected performance of the projects and impact the required project activities as well as decision making. Consequently, the additional dimension of scope was introduced to focus on attitudes and perceptions of customers. It

is observed as a key enhancement to determine project outcomes. The study by Shenhar et al. (2001) mentioned about two types of projects – operationally and strategically managed projects. The operationally managed projects emphasise more on project-specific performance in terms of cost, schedule, and goals. Whereas, strategically managed projects keep the focus on business value creation and related outcomes to fulfil long-term avenues. Organisations give attention and spend considerable time to improve business success and plan for future endeavours. Hence, business success is included when overall success in projects is measured to account for value created through the projects in the market (Zhao et al., 2021; Teller et al., 2014; Gregor et al., 2006).

2.4 Risk mitigation strategies

Studies claim that risks in projects can be defined in a way that impacts projects during the initiation and execution stages. Typical project risks or project changes include delays in the start and finish of project activities, changes in the project tasks, and resource variations. Such changes occur due to impulsive decision making and insufficient information across project stakeholders. Studies have emphasised having a systematic risk management process in IT projects. It is debated that strategies for risk mitigation positively influence the on-time delivery of the projects through improved estimation of project resources. To manage project risks, project managers should develop risk mitigation strategies that suit the project needs. Several risk mitigation strategies to reduce project delays have been proposed in the available project management literature; that address unexpected variations such as crashing project activities, vertical integration approach, project visibility, supplier development, project flexibility, etc. Project-based organisations should adopt flexibility to manage challenges that arise due to complexity, uncertainty, and distinctiveness of projects; along with systemic thinking (Frank and Kordova, 2013). Also, project performance outcomes based on scope, budget and schedule, should be given more importance rather goals-based outcomes (Davis, 2007; Olsson, 2006a; Shenhar et al., 2002). The effectiveness of such recommended strategies to mitigate risks and lower the impact of delays in business has not been examined (Saeed et al., 2017; Haseeb et al., 2011). The present study investigates the role of project flexibility in minimising project delays and achieving success.

2.4.1 Project flexibility

Projects cope with uncertainties, variation in project schedules, and indefinite consequences by applying flexibility. It is recommended to have flexibility in projects during initial stages to ensure that organisations adopt changes based on uncertain conditions. Flexibility supports projects in organisation's long term planning by incorporating evolving methodologies needed to remain successful (Olsson, 2006a, 2006b). By applying flexibility in projects and making adjustments in project capacities, neglected prospects are utilised in dynamic settings to realise anticipated outcome (Awe and Church, 2020; De Bakker et al., 2014; Floricel et al., 2012; Olsson, 2008). Organisations that continue to be customer-focused sustain in dynamic environment by adapting flexibility. The success or failure of any organisation depends on the ability to react to changes (Skorstad and Ramsdal, 2016). Flexibility in projects aligns project objectives without violating any outcomes of the project's earlier decisions made by project stakeholders (Demir et al., 2015; Floricel et al., 2012). Flexibility eliminates

uncertain events in dynamic settings in project-based organisations and prevents uncontrollable consequences. Thus, organisations should be more flexible when uncertainty is high for the project to be effective (Ni et al., 2021; Zailani et al., 2016; Nandakumar et al., 2013; Shahu et al., 2013).

3 Hypotheses development and conceptual framework

3.1 Senior management commitment and project success

In a dynamic environment, organisations should act proactively to gain competitive advantage with the help of innovative ideas and fostering of organisational culture, especially by senior leadership (Nowak, 1997). To foster innovative culture, senior management should remain dedicated, bring about creativity with innovative ideas, maintain continued focus on new technology developments and encourage managers to take risks (Burström and Wilson, 2015). Senior management involvement and support are critical to managing project risks, proactiveness, project autonomy, and overall project success (Gemünden et al., 2005; Gustafson and Hundt, 1995). Senior management can structure an individual's activities by synergising and attain the organisational goal, a crucial component for project success (Miller and Pearce, 1987). A definite agreement exists that the key determining factor for successful project implementation is the commitment from senior leadership in an organisation. The absence of senior management commitment causes project failures and much management literature indicates that senior management involvement is crucial towards an organisation's effectiveness and its progress (Solovida and Latan, 2017; Burritt et al., 2010). Senior management commitment directly enhances project performance (Tzempelikos, 2015). Pasumarthi et al. (2015) debated that if low commitment and effectiveness is observed regarding senior management, then an organisation would be unable to offer quality services. Ultimately, project performance, organisation and business success will also be affected. Authors have described that whenever environmental strategies need to be assimilated in organisational processes, organisational and project performance is enhanced by having top management commitment (Pinna et al., 2018). The performance of senior leadership improves project management processes and related quality. Satisfying the project stakeholders' expectations helps in addressing long-term benefits, new opportunities and infrastructure to be needed to execute required projects (Unger et al., 2012; Shenhar and Dvir, 2007; Baccarini, 1999). Thus, based on the upper echelons perspective, organisational performance is a reflection of the behaviour of the senior management (Hambrick and Mason, 1984). Hence, proposed:

H1 Senior management commitment has significant influence on success in IT projects.

3.2 Project flexibility and project success

Usually, during preliminary project phase, project planning and gathering specific information on project related activities takes time and includes project scope definition, acquisition of project resources, project sponsorship, environmental factors and any regulatory project needs (Pollack et al., 2018). A project manager aims to complete a project with respect to iron triangle and inadequate resources for project to be

successfully executed (Coleman and MacNicol, 2016). However, practically, project managers need to deal with various changes and project uncertainties during project execution. Project managers know how to overcome project challenges by planning ahead, establish problem-solving groups in projects to cope with uncertain events and maintain a status quo of project tasks (Coleman and MacNicol, 2016). Flexibility in projects provides the ability to make changes with minimal sanction of effort, cost, time or performance. It depicts the capability of a project to manage changes in scope with suitable management actions, measures and defined policies. Project flexibility is a critical element to make sure that the project remains as per plan considering time, quality and cost (Shahu et al., 2013; Atkinson, 1999). Flexible project approaches and practices align with organisational and project based goals in short term and long term (Saeed et al., 2017). This offers suitable indication of project success at all stages of project execution and implementation. Hence proposed:

H2 Project flexibility has a significant influence on the success of projects.

3.3 Moderation effects of project flexibility

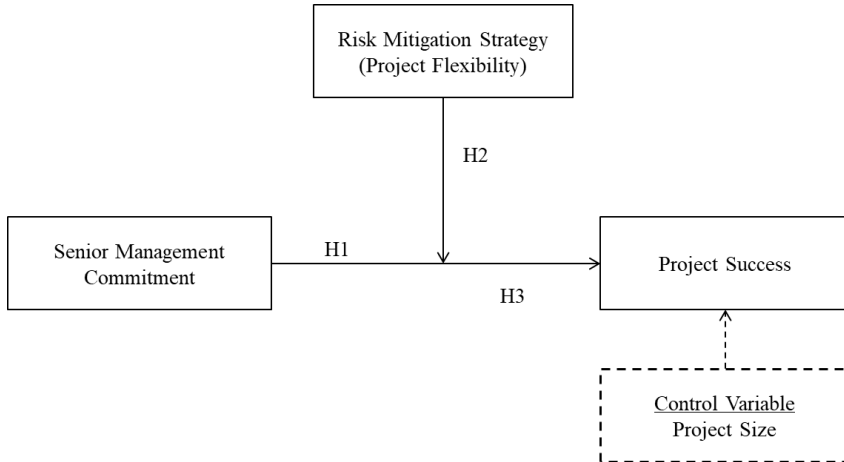
Contingency theory is widely used in project management domain. The contingency theory perspective foresees the scenarios where the influence of project flexibility will be low or high. Based on the uncertainties, various approaches are applied to manage project risks. The study examines how flexibility in projects influences risks in projects as well as on business. Thus, project flexibility is also explained by the contingency theory since projects with more flexibility are less likely to embrace standard processes. In project-based organisation, risk mitigation strategies are used to overcome project related uncertain events. Project managers should be adaptable and flexible with respect to the changes as expected (Casady et al., 2018). Customary attention in project management handles uncertainties and benefits a progressive environment. Such dynamic natured settings help when stakeholders of a project gain significant understanding of the actual project requirements. Therefore, flexibility is considered to be the response towards uncertainty created by environment (Grèze et al., 2014; Nandakumar et al., 2013). In financial terms, project costs increase based on uncertainty as far as flexibility is absorbed and resources are conclusively dedicated. Project managers face uncertain events because of gaps in project information especially while making decisions. Flexibility relates to the involvement of project stakeholders, the approach used to manage projects and the way project information is shared across project stakeholders (Baccarini, 1999). The idea related to business interdependencies based on globalisation has become crucial with the fast pace of business progress, and hence demands that the organisation remain versatile and adaptable (Zailani et al., 2016; Nandakumar et al., 2013). Thus, successful and effective projects need more flexibility especially in financial and technical capabilities and contractual engagements, for project risk mitigation (El-Sayegh, 2014). Hence proposed:

H3 Project flexibility moderates the effect of senior management commitment on the success of projects.

3.4 Conceptual framework

Figure 1 represents the conceptual framework for the present study based on project related literature and by applying theoretical aspects.

Figure 1 Conceptual framework



Source: Zailani et al. (2016), Zaman et al. (2019) and Tiwari and Suresha (2021b)

4 Research methodology

4.1 Sample data collection

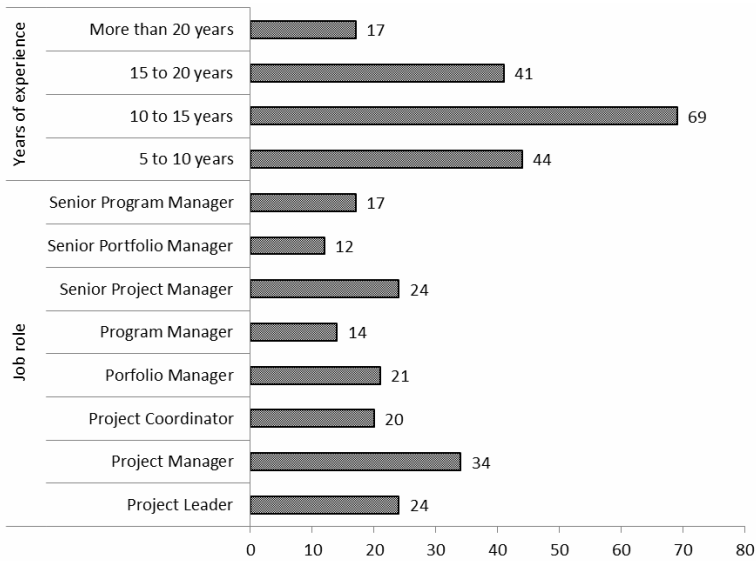
To test the hypotheses, a sample of 166 datasets was used in the study. The data analysis was performed using IT projects in financial services. To examine the effects of senior management commitment and project flexibility on project success, the IT projects implemented between 2014 and 2020 were chosen for the study. A web-based survey questionnaire was shared with over 500 managers in financial services through e-mail during the timeframe of January 2020 to July 2020. All questionnaires were carefully verified for data correctness with respect to the target organisations and the sample respondents. The response rate for this survey was 26.8%. No significant differences (alpha 5%) between initial and later responses were observed. To lessen the bias risk based on common-method variance (Podsakoff et al., 2003), a dual-informant design was adopted, which included project managers at different management levels. The project managers assessed top management commitment, project flexibility and project performance. The senior project manager's informants assessed business success.

4.2 Profiles of the survey respondents

Figure 2 depicts the profile of research respondents. The respondents' background supports the notion that project managers were in charge of operational aspects of the projects and, therefore, suitable to assess the processes for project management. Figure 2

shows that over half of the respondents were with designations of project leader, project manager, project coordinator, portfolio manager and program manager. The senior leadership informants (such as senior portfolio manager, senior project manager, and senior program manager) are responsible for decision-making in IT projects.

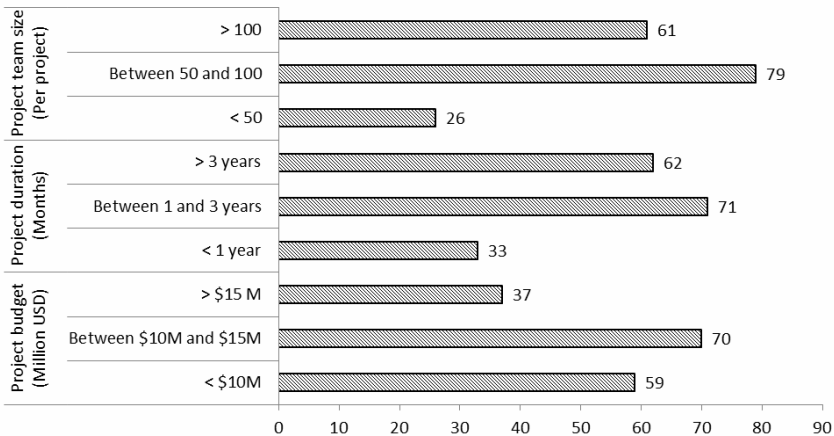
Figure 2 Respondents' profile



4.3 Sample characteristics

Figure 3 shows the sample characteristics. In the present sample, most of the IT projects have an average project size with project budget between ten to fifteen million USD, project duration between one to three years and the number of project members per project are between the ranges of 50 to 100.

Figure 3 Sample characteristics



4.4 Measures

The study variables were based on multiple item scales referred from project management, top management commitment, entrepreneurship and related literature. A few scales were re-worded and adapted to align with the study context. Five industry-specific professionals from the sample firms were consulted to evaluate all items based on a seven-point Likert scale (e.g., 1 as 'strongly disagree' and 7 as 'strongly agree'), and by averaging the particular items each study variable was constructed (Hair et al., 2010). A double-blind back-translation approach was taken into consideration to ensure meaning accuracy (Sinaiko and Brislin, 1973). A pilot test was conducted with consultants from the financial services industry for the validation of all measures (Nunnally, 1994). All item scales' validity was verified by applying PCFA (principal components factor analysis), followed by CFA (confirmatory factor analysis). The PCFA was performed to observe that all items load as a single factor. Cronbach's alpha (α) indicates the scales reliability, and acceptable values were found to be more than 0.7. A confirmatory factor analysis (CFA) was carried out for measurement model validation (Guide and Ketokivi, 2015; Ketokivi, 2006). The measurement model is considered acceptable if comparative fit index (CFI) and goodness of fit index (GFI) exceeds 0.90, root mean square error of approximation (RMSEA) is below 0.07 and standardised root mean square residual (SRMR) is below 0.08 (Hu and Bentler, 1999). The model fit was acceptable at CMIN/DF = 2.928, CFI = 0.983, RMSEA = 0.071, SRMR = 0.027.

4.4.1 Dependent variable

Project success is measured ($\alpha = 0.834$) using seven items, e.g., *projects have a high scope, quality, budget and schedule adherence, project generated high profits, advancement in technological capability and new market or product created based on project outcomes* (Jonas et al., 2013; Shenhar et al., 2001).

4.4.2 Independent variable

Senior management commitment is measured using a 6-item scale ($\alpha = 0.801$) developed by Boonstra (2013), e.g., *senior management supported to have adequate project resources to implement successfully; senior management instituted and adapted adequate processes, structures, and controlling mechanisms; senior management established frequent communication with project teams; senior management possesses relevant expertise in project management; senior management used authority to advance capabilities in project management; senior management motivated the project team to achieve project objectives.*

4.4.3 Moderating variable

Project flexibility is measured using three items ($\alpha = 0.716$), conceptually based on work by Zailani et al. (2016), e.g., *it is possible to switch different project resources; the project team is able to cope with changes in the project; an alternative capacity is available to accommodate the change in project specifications.*

4.4.4 Control variable

Studies showed that the success of projects decreases as the project size increases (Afful and Matey, 2019; Sauer et al., 2007; Aladwani, 2002; Shenhar et al., 2002). Project size affects the overall project performance resulting in increased project risks. The components that are used in measuring the size of IT projects are project duration, project team size, and project budget. Thus, *project size* is one of the significant bases of project success and measured with items adapted from Barki et al. (2001). *Project size* is captured by the *natural logarithm of the mean value of project team size, project budget allocated and project duration in months* (Ko and Kirsch, 2017).

5 Research outcomes

This research significantly contributes to practices and literature because none of the studies, to our knowledge, examines the moderating effect of flexibility in projects on senior management commitment in achieving success in financial services IT projects.

5.1 Descriptive statistics

Table 1 depicts the descriptive statistics with means, standard deviation and correlations among study variables.

Table 1 Descriptive statistics

		<i>Variables</i>	<i>0</i>	<i>1</i>	<i>2</i>	<i>3</i>
Mean			5.031	5.025	4.822	3.824
Std. dev.			1.245	1.082	1.183	1.487
Kendall's tau_b	0	Project success	1			
	1	Senior management commitment	.397***	1		
	2	Project flexibility	.431***	.375**	1	
	3	Project size	(-).146**	(-).113**	.037	1
Spearman's rho	0	Project success	1			
	1	Senior management commitment	.547***	1		
	2	Project flexibility	.563***	.484***	1	
	3	Project size	(-).203**	(-).178**	.034	1

Note: ***Sig. at 0.01 level (2-tailed).

**Sig. at 0.05 level (2-tailed).

5.2 Moderation analysis with ordinal regression analysis

In the present study, the relationship between ordinal outcome variable, i.e., project success, senior management commitment, and project flexibility is being established. The study variables were measured on an ordinal, categorical, and seven-point Likert scale. It was not possible to assume the homogeneity of variance and normality for the ordinal categorical outcomes. The ordinal regression method was preferred because it does not assume constant variance and normality, but needs the assumption of parallel lines

throughout all levels of the categorical outcome (Tiwari and Suresha, 2021a; Denham, 2010; Elamir and Sadeq, 2010; Norusis, 2008). Diagnostic tests were performed before performing the regression analysis to determine any assumptions violation. No variables ($n = 166$) were found with any missing values. Thus, the ordinal regression analysis was performed using SPSS version 21.

Table 2 Ordinal regression analysis

Study variables	Project success			
	Model A		Model B	
Control variable				
Project size	(-) 0.179	(-0.095)	(-) 0.167	(-0.096)
Independent variable				
Senior management commitment	0.723***	(0.172)	0.797***	(0.176)
Moderating variable				
Project flexibility	1.389***	(0.212)	1.479***	(0.218)
Interaction				
Senior management commitment * Project flexibility			0.237**	(0.119)
-2 log likelihood	1,036.215		1,036.215	
Likelihood ratio (chi-square) χ^2	110.861***		115.547***	
Cox and Snell pseudo R ²	0.489		0.503	

Notes: Unstandardised coefficients and std. errors are shown in parentheses. (N = 166).

***Sig. at 0.001 level (2-tailed).

**Sig. at 0.05 level (2-tailed).

Table 2 depicts the ordinal regression analysis results. The outcomes of the first regression model (model A) with no interactions indicated that flexibility in projects and commitment from senior management significantly impact success in projects ($p < 0.001$). The variables in model A explained 48.9% of variation (Cox and Snell pseudo-R²) in project success. The second model (model B) added interaction term to the previous model to examine the interaction effect. Model B showed the variation inflation factor (VIF) as 2.25. The variables in model B explained 50.3% variation (Cox and Snell pseudo-R²) in project success.

6 Discussion

This study addresses the research gaps and provides evidence to support the notion that senior management commitment and project flexibility have significant influence on success. The positive impact of senior management commitment on project success has been supported by the study outcomes. More precisely, greater commitment of senior management has a positive impact on strategic benefits and transformation benefits. The study findings show that the positive impact of top management that has been identified at the organisation level can also be found at the project team level (Gregor et al., 2006). The strong influence of senior management commitment helps in achieving project success and business benefits, and is in line with the earlier upper echelon behaviour that

focuses on the effect of top management support like advice seeking, behavioural integration, entrepreneurial drive, and risk taking on business benefits. The study results support this positive effect at the project level by applying a project level approach.

Study outcomes show that commitment from senior leadership team in any organisation is critical and motivates internal and external project stakeholders to accomplish desired success in projects. Thus, involvement of senior management offers more opportunities to achieve project-based objectives, increases influence on project sponsors or stakeholders, and leads to long term success. The success in projects differs based on project management approaches adopted, project environments and project types (Khattak and Shah, 2020; Albert et al., 2017; Garcia-Crespo et al., 2009). The study findings support the notion that flexibility is a key factor to achieve success in projects (Zaman et al., 2019; Zailani et al., 2016). A few research studies offer similar conclusions but none have examined the extent of senior management role and interactional effect of flexibility of projects on the success of IT projects in financial services industry. Project managers can include flexible approaches as one of the project risk mitigation strategies to avoid any uncertain situations resulting into project failures. The current study indicates that flexibility in projects has a positive moderation effect on the association between senior management commitment and project success. Hence, the influence of senior management on project success is high when flexibility in projects is high.

Strategies used to mitigate risks minimise the unfavourable effects of uncertain events through primary project risk analysis along with contingent factors. With projects being innovative, it is difficult to collate project related information for risk planning as innovation exposes projects to uncertain situations. Thus, project resources should be assigned appropriately to generate required information needed for risk planning. Furthermore, detrimental effects of project flexibility on the success of projects should increase with more flexible approaches and practices. Hence, study findings reinforced the substantial moderation effect of flexibility in projects. Since managers may have different preferences, perspectives and capabilities; these factors inhibit project success (Patanakul, 2015).

The study outcomes on project success suggest that the resource and coordination issues among project stakeholders (i.e., internal and external) can be improved by maintaining transparency, sharing knowledge on project related processes and practices, enhancing the knowledge across project teams, informing project stakeholders about the customer's future requirements, regular project reviews to monitor the project progress, communicating with project stakeholders on the future strategic needs, more information exchange among stakeholders and continued effort to look for new approaches to integrate processes used in IT projects (Zailani et al., 2016).

7 Conclusions

Each project is unique and needs a different contingent approach to achieve project goals. Different variables involved in a project change based on the project context. This study highlights and illustrates how senior management commitment and risk mitigation strategy (i.e., project flexibility) result in success of IT projects in financial services. The study findings state that greater remunerations of senior leadership commitment for projects with higher complexity, innovativeness, and uncertainties lead to overall business as well as project success. This research is in line with earlier studies, which

re-enforce the value-add of senior management commitment and flexibility in projects on achieving success in general.

The examination of success in IT projects is imperative in measuring the overall performance of project groups in the long term. To improve in project management approaches, lessons learned from individual projects should be recognised as significant. However, it can be challenging to separate the root causes from individual projects for failures or success in projects (Zaman et al., 2019; Albert et al., 2017). The study outcomes offer useful insights specific to project management and can be applied on project portfolios or programs and in discrete projects. Overall, this study addresses the weaknesses of the contingency perspective as only a few empirical studies have been presented till date.

Considering the practical aspects of project management, key activities in projects are driven by the involvement of project stakeholders. This makes it vital for the project manager to include the expectations of key project stakeholders in the initial project planning phases. To effectively use flexibility in projects, project managers should showcase 'can do' attitude, remain focused to have a supportive culture across project groups, demonstrate the ability to accomplish project goals, collaborate with multiple stakeholder and enhance knowledge sharing with continuous learning (Ajmal et al., 2013). Likewise, senior managers should continue to effectively manage risks with timely decision-making and have constant interaction with project sponsors. Senior managers should prioritise key challenges with careful allocation of project resources during the implementation of radical and disruptive innovation. Thus, project managers should remain focused in the current market settings by not just achieving schedule and budget goals but also managing different organisational aspects.

Successful project management drives business benefits and to achieve success in projects along with the desired organisational goals, IT project management professionals (especially managers) should continue to deliver business value (Crosby, 2012). Senior managers should ensure to enable project groups to offer business benefits such as new technology, competitive advantage with new competencies and products or services, etc. Project managers should understand the organisation as well as project vision, ensure to have open communication with project groups, empower project teams and foster an environment to deliver value across all project stages (Baiden et al., 2018). Hence, senior leadership should focus on the continued professional development of the project managers through constant learning and build the leadership skills required in a dynamic environment.

The study findings also illustrate that project flexibility has substantial influence on senior management commitment and success in general. Hence, senior leadership should be committed to managing the required level of flexibility in project execution to remain successful. Organisations should train project managers on strategies that offer flexibility and develop risk mitigation strategies to deal with late reconciliation of requirements (especially for stage-gate models), resource allocation in dynamic settings, contingency planning, etc. Similarly, project managers should remain focused to upskill project groups' knowledge to enhance project performance and achieve expected outcomes.

Consequently, senior managers should encourage innovation-driven leadership capabilities at project or portfolio levels, have more visibility on project controls through periodic reviews and build an entrepreneurial-oriented culture to foster business outcomes. Portfolio or program managers should pursue challenging opportunities; learn more about market dynamics and enhance capabilities to reap long-term benefits. Hence,

managers at all management levels should remain focused on strategic goals of the organisation, resource development process, allocation of the tangible and intangible assets, and also realise transformational remunerations such as new processes, skills, and business tactics.

8 Limitation and future recommendations

This research has some limitations that can be answered by further research. First, cross-sectional data representing IT projects from financial services organisations is used. Therefore, future studies can be conducted considering project types from different industries, and sectors. Second, although this study examines the moderation role of risk mitigation strategy (i.e., project flexibility) between senior management commitment and the success of projects, managers' decision making consists of many contingency factors. Future studies can examine other potential moderating variables considering risk mitigation strategies such as project visibility and how the risk management process influences the entire process. Third, the study depends on the manager's perspective and quantitative method to analyse the relationship between senior management commitment and project flexibility in achieving project success. Future studies can assess using a qualitative method, for example, case studies, in-depth interviews, or focus groups, and analyse senior leadership commitment at different project stages.

References

- Afful, E. and Matey, H. A. (2019) *IT Project Success: Practical Frameworks Based on Key Project Control Variables*, arXiv preprint arXiv:1910.06215.
- Aga, D.A., Noorderhaven, N. and Vallejo, B. (2016) 'Transformational leadership and project success: the mediating role of team-building', *International Journal of Project Management*, Vol. 34, No. 5, pp.806–818.
- Ahimbisibwe, A., Cavana, R.Y. and Daellenbach, U. (2015) 'A contingency fit model of critical success factors for software development projects', *Journal of Enterprise Information Management*.
- Aiyer, M., Panigrahi, J.K. and Das, B. (2018) 'Successful customer relationship management in business process integration and development of applications for project management', *International Journal of Mechanical Engineering and Technology*, Vol. 9, No. 2, pp.637–643.
- Ajmal, M.M., Sandhu, M.A. and Jabeen, F. (2013) 'Assessment of knowledge management practices in project-oriented business', *International Journal of Project Organisation and Management*, Vol. 5, No. 3, pp.279–292.
- Aladwani, A.M. (2002) 'IT project uncertainty, planning and success', *Information Technology & People*, Vol. 15, No. 3, p.210.
- Albert, M., Balve, P. and Spang, K. (2017) 'Evaluation of project success: a structured literature review', *International Journal of Managing Projects in Business*, Vol. 10, No. 4, pp.796–821.
- Amoako-Gyampah, K., Meredith, J. and Loyd, K.W. (2018) 'Using a social capital lens to identify the mechanisms of top management commitment: a case study of a technology project', *Project Management Journal*, Vol. 49, No. 1, pp.79–95.
- Andersén, J. and Ljungkvist, T. (2021) 'Resource orchestration for team-based innovation: a case study of the interplay between teams, customers, and top management', *R&D Management*, Vol. 51, No. 1, pp.147–160.

- Atkinson, R. (1999) 'Project management: cost, time and quality, two best guesses and a phenomenon, its time to accept other success criteria', *International Journal of Project Management*, Vol. 17, No. 6, pp.337–342.
- Awe, O.A. and Church, E.M. (2020) 'Project flexibility and creativity: the moderating role of training utility', *Management Decision* [online] <https://doi.org/10.1108/MD-02-2020-0226>.
- Baccarini, D. (1999) 'The logical framework method for defining project success', *Project Management Journal*, Vol. 30, No. 4, pp.25–32.
- Baiden, B.K., Agyekum, K. and Atuahene, B.T. (2018) 'Client-contractor relations on construction projects in Ghana', *International Journal of Project Organisation and Management*, Vol. 10, No. 4, pp.333–351.
- Barki, H., Rivard, S. and Talbot, J. (2001) 'An integrative contingency model of software project risk management', *Journal of Management Information Systems*, Vol. 17, No. 4, pp.37–69.
- Berry, L.L., Bolton, R.N., Bridges, C.H., Meyer, J., Parasuraman, A. and Seiders, K. (2010) 'Opportunities for innovation in the delivery of interactive retail services', *Journal of Interactive Marketing*, Vol. 24, No. 2, pp.155–167.
- Berssaneti, F.T. and Carvalho, M.M. (2015) 'Identification of variables that impact project success in Brazilian companies', *International Journal of Project Management*, Vol. 33, No. 3, pp.638–649.
- Boonstra, A. (2013) 'How do top managers support strategic information system projects and why do they sometimes withhold this support?', *International Journal of Project Management*, Vol. 31, No. 4, pp.498–512.
- Burström, T. and Wilson, T.L. (2015) 'Fuzzy projects: a qualitative investigation of project leaders' service role', *International Journal of Project Organisation and Management*, Vol. 7, No. 3, pp.221–235.
- Carvalho, M.M. and Rabechini Jr., R. (2017) 'Can project sustainability management impact project success? An empirical study applying a contingent approach', *International Journal of Project Management*, Vol. 35, No. 6, pp.1120–1132.
- Casady, C., Eriksson, K., Levitt, R.E. and Scott, W.R. (2018) 'Examining the state of public-private partnership (PPP) institutionalization in the United States', *The Engineering Project Organization Journal*, Vol. 8, No. 1, pp.177–198.
- Chipulu, M., Ojiako, U., Gardiner, P., Williams, T., Mota, C., Maguire, S., ... and Marshall, A. (2014) 'Exploring the impact of cultural values on project performance', *International Journal of Operations & Production Management*, Vol. 34, No. 3, pp.364–389.
- Coleman, S. and MacNicol, D. (2016) *Project Leadership*, Routledge, London.
- Costantino, F., Di Gravio, G. and Nonino, F. (2015) 'Project selection in project portfolio management: An artificial neural network model based on critical success factors', *International Journal of Project Management*, Vol. 33, No. 8, pp.1744–1754.
- Crosby, P. (2012) 'Characteristics and techniques of successful high-technology project managers', *International Journal of Project Organisation and Management*, Vol. 4, No. 2, pp.99–2122.
- Davenport, T.H. (2001) *Mission Critical – Realizing the Promise of Enterprise Systems*, Harvard Business School Press, Boston, MA.
- Davis, P. (2007) 'The effectiveness of relational contracting in a temporary public organization: intensive collaboration between an English local authority and private contractors', *Public Administration*, Vol. 85, No. 2, pp.383–404.
- De Bakker, K., Boonstra, A. and Wortmann, H. (2014) 'The communicative effect of risk identification on project success', *International Journal of Project Organisation and Management*, Vol. 6, Nos. 1–2, pp.138–156.
- Demir, S.T., Bryde, D.J., Fearon, D.J. and Ochieng, E.G. (2015) 'Three dimensional stakeholder analysis – 3dSA: adding the risk dimension for stakeholder analysis', *International Journal of Project Organisation and Management*, Vol. 7, No. 1, pp.15–30.

- Denham, B.E. (2010) 'Measurement of risk perceptions in social research: a comparative analysis of ordinary least squares, ordinal and multinomial logistic regression models', *Journal of Risk Research*, Vol. 13, No. 5, pp.571–589.
- Elamir, E. and Sadeq, H. (2010) 'Ordinal regression to analyze employees' attitudes towards the application of total quality management', *Journal of Applied Quantitative Methods*, Vol. 5, No. 4, pp.647–658.
- El-Sayegh, S.M. (2014) 'Project risk management practices in the UAE construction industry', *International Journal of Project Organisation and Management*, Vol. 6, Nos. 1–2, pp.121–137.
- Fard, H.D., Hajiani, M., Fatemifar, K. and Khabbaz, M.G. (2020) 'Leadership in project management: a scoping review', *International Journal of Project Organisation and Management*, Vol. 12, No. 1, pp.74–116.
- Floriciel, S., Piperca, S. and Banik, M. (2012) 'Increasing project flexibility: the response capacity of complex projects', *Project Management Journal*, Vol. 43, No. 4, pp.2–85.
- Formisano, V., Fedele, M. and Antonucci, E. (2016) 'Innovation in financial services: a challenge for start-ups growth', *International Journal of Business and Management*, Vol. 11, No. 3, pp.149–162.
- Frank, M. and Kordova, S. (2013) 'Developing systems thinking through engaging in multidisciplinary high-tech projects', *International Journal of Project Organisation and Management*, Vol. 5, No. 3, pp.222–238.
- Frefer, A.A., Mahmoud, M., Haleema, H. and Almamlook, R. (2018) 'Overview success criteria and critical success factors in project management', *Industrial Engineering & Management*, Vol. 7, No. 1, pp.2169–0316.
- Garcia-Crespo, A., Colomo-Palacios, R., Gómez-Berbís, J.M. and Ruano-Mayoral, M. (2009) 'A project management methodology for commercial software reengineering', *International Journal of Project Organisation and Management*, Vol. 1, No. 3, pp.253–267.
- Garousi, V., Tarhan, A., Pfahl, D., Coşkunçay, A. and Demirörs, O. (2019) 'Correlation of critical success factors with success of software projects: an empirical investigation', *Software Quality Journal*, Vol. 27, No. 1, pp.429–493.
- Gemünden, H.G., Salomo, S. and Krieger, A. (2005) 'The influence of project autonomy on project success', *International Journal of Project Management*, Vol. 23, No. 5, pp.366–373.
- Gomber, P., Kauffman, R.J., Parker, C. and Weber, B.W. (2018) 'On the fintech revolution: Interpreting the forces of innovation, disruption, and transformation in financial services', *Journal of Management Information Systems*, Vol. 35, No. 1, pp.220–265.
- Gregor, S., Martin, M., Fernandez, W., Stern, S. and Vitale, M. (2006) 'The transformational dimension in the realization of business value from information technology', *The Journal of Strategic Information Systems*, Vol. 15, No. 3, pp.249–270.
- Grèze, L., Pellerin, R., Leclaire, P. and Perrier, N. (2014) 'Evaluating the effectiveness of task overlapping as a risk response strategy in engineering projects', *International Journal of Project Organisation and Management*, Vol. 6, Nos. 1–2, pp.33–47.
- Guide Jr., V.D.R. and Ketokivi, M. (2015) 'Notes from the editors: redefining some methodological criteria for the journal', *Journal of Operations Management*, Vol. 37, No. 1, pp.v–viii.
- Gunduz, M., Nielsen, Y. and Ozdemir, M. (2013) 'Quantification of delay factors using the relative importance index method for construction projects in Turkey', *Journal of Management in Engineering*, Vol. 29, No. 2, pp.133–139.
- Gustafson, D.H. and Hundt, A.S. (1995) 'Findings of innovation research applied to quality management principles for health care', *Health Care Management Review*, Vol. 20, No. 2, pp.16–33.
- Hair, J., Black, W., Babin, B., Anderson, R. and Tatham, R. (2010) *Multivariate Data Analysis*, Pearson Prentice Hall, New Jersey.

- Hambrick, D.C. and Mason, P.A. (1984) 'Upper echelons: the organization as a reflection of its top managers', *Academy of Management Review*, Vol. 9, No. 2, pp.193–206.
- Hardaway, D., Harryvan, R., Wang, X.F. and Goodson, J. (2016) 'Partnering with practice: How partnerships can be developed, shared and managed', *Communications of the Association for Information Systems*, Vol. 38, No. 1, p.6.
- Haseeb, M., Lu, X., Bibi, A., Maloof-ud-Dyian and Rabbani, W. (2011) 'Problems of projects and effects of delays in the construction industry of Pakistan', *Australian Journal of Business and Management Research*, Vol. 1, No. 5, pp.41–50.
- Hermano, V. and Martin-Cruz, N. (2016) 'The role of top management involvement in firms performing projects: A dynamic capabilities approach', *Journal of Business Research*, Vol. 69, No. 9, pp.3447–3458.
- Herrera, R.F., Matus, J., Santelices, C. and Atencio, E. (2020) 'Interaction between project management processes: a social network analysis', *International Journal of Project Organisation and Management*, Vol. 12, No. 2, pp.133–148.
- Hu, L.T. and Bentler, P.M. (1999) 'Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives', *Structural Equation Modeling: a Multidisciplinary Journal*, Vol. 6, No. 1, pp.1–55, doi:10.1080/10705519909540118.
- Ifinedo, P. and Nahar, N. (2006) 'Do top and mid-level managers view enterprise resource planning (ERP) systems success measures differently?', *International Journal of Management and Enterprise Development*, Vol. 3, No. 6, pp.618–635.
- Jonas, D., Kock, A. and Gemünden, H.G. (2013) 'Predicting project portfolio success by measuring management quality: a longitudinal study', *IEEE Transactions on Engineering Management*, Vol. 60, No. 2, pp.215–226.
- Kaupa, F. and Naude, M.J. (2021) 'Critical success factors in the supply chain management of essential medicines in the public health-care system in Malawi', *Journal of Global Operations and Strategic Sourcing*, Vol. 10, No. 1, pp.34–60.
- Ketokivi, M. (2006) 'Elaborating the contingency theory of organizations: The case of manufacturing flexibility strategies', *Production and Operations Management*, Vol. 15, No. 2, pp.215–228.
- Khattak, M.S. and Shah, S.Z.A. (2020) 'Top management capabilities and firm efficiency: relationship via resources acquisition', *Business & Economic Review*, Vol. 12, No. 1, pp.87–118.
- Klijn, E.H. and Koppenjan, J. (2016) 'The impact of contract characteristics on the performance of public-private partnerships (PPPs)', *Public Money & Management*, Vol. 36, No. 6, pp.455–462.
- Ko, D.G. and Kirsch, L.J. (2017) 'The hybrid IT project manager: one foot each in the IT and business domains', *International Journal of Project Management*, Vol. 35, No. 3, pp.307–319.
- Malagueño, R., Gomez-Conde, J., de Harlez, Y. and Hoffmann, O. (2021) 'Controller involvement in a project management setting: effects on project functions and performance', *Journal of Applied Accounting Research*, Vol. 22, No. 2, pp.334–364.
- Miller, W.C. and Pearce, N.T. (1987) 'Synergizing total quality and innovation', *National Productivity Review*, Vol. 7, No. 1, pp.34–44.
- Montoya, M. (2016) *Agile Adoption by the Financial Services Industry*, cPrime [online] <https://www.cprime.com/2012/09/agile-adoptionfinancial-services-industry/> (accessed 2 April 2021).
- Morkunas, V.J., Paschen, J. and Boon, E. (2019) 'How blockchain technologies impact your business model', *Business Horizons*, Vol. 62, No. 3, pp.295–306.
- Müller, R. and Jugdev, K. (2012) 'Critical success factors in projects: Pinto, Slevin, and Prescott – the elucidation of project success', *International Journal of Managing Projects in Business*, Vol. 5, No. 4, pp.757–775.

- Müller, R. and Turner, R. (2007) 'The influence of project managers on project success criteria and project success by type of project', *European management journal*, Vol. 25, No. 4, pp.298–309.
- Naeem, S. and Khanzada, B. (2017) 'Impact of transformational leadership in attainment of project success: the mediating role of job satisfaction', *International Journal of Business and Social Science*, Vol. 8 No. 9, pp.168–177.
- Nandakumar, M.K., Jharkharia, S. and Nair, A. (2013) 'Environmental uncertainty and flexibility', *Global Journal of Flexible Systems Management*, Vol. 13, No. 2, pp.121–122.
- Nguyen, L.D. and Ogunlana, S.O. (2004) 'A study on project success factors in large construction projects in Vietnam', *Engineering, Construction and Architectural Management*, Vol. 11, No. 6, pp.404–413.
- Nguyen, T.S. and Mohamed, S. (2021) 'Mediation effect of stakeholder management between stakeholder characteristics and project performance', *Journal of Engineering, Project, and Production Management*, Vol. 11, No. 2, pp.102–117.
- Ni, G., Xu, H., Cui, Q., Qiao, Y., Zhang, Z., Li, H. and Hickey, P.J. (2021) 'Influence mechanism of organizational flexibility on enterprise competitiveness: the mediating role of organizational innovation', *Sustainability*, Vol. 13, No. 1, p.176.
- Norusis, M. (2008) *SPSS 16.0 Advanced Statistical Procedures Companion*, Prentice Hall Press.
- Nowak, A. (1997) 'Strategic relationship between quality management and product innovation', *The Mid-Atlantic Journal of Business*, Vol. 33, No. 2, p.119.
- Nunes, M. and Abreu, A. (2020) 'Applying social network analysis to identify project critical success factors', *Sustainability*, Vol. 12, No. 4, p.1503.
- Nunnally, J.C. (1994) *Psychometric Theory*, 3rd ed., Tata McGraw-Hill Education, New Delhi, India.
- Oh, M. and Choi, S. (2020) 'The competence of project team members and success factors with open innovation', *Journal of Open Innovation: Technology, Market, and Complexity*, Vol. 6, No. 3, p.51.
- Olsson, N.O.E. (2006a) 'Management of flexibility in projects', *International Journal of Project Management*, Vol. 24, No. 1, pp.66–74.
- Olsson, N.O.E. (2006b) *Project Flexibility in Large Engineering Projects*, Norwegian University of Science and Technology, Trondheim.
- Olsson, N.O.E. (2008) 'External and internal flexibility – aligning projects with the business strategy and executing projects efficiently', *International Journal of Project Organization and Management*, Vol. 1, No. 1, pp.47–64.
- Parida, V., Sjödin, D.R., Lenka, S. and Wincent, J. (2015) 'Developing global service innovation capabilities: How global manufacturers address the challenges of market heterogeneity', *Research-Technology Management*, Vol. 58, No. 5, pp.35–44.
- Pasumarthi, S., Vaitheeswaran, G., Gupta, T. and Satpathy, S.R. (2015) *U.S. Patent No. 9,037,579*, US Patent and Trademark Office, Washington, DC.
- Patanakul, P. (2015) 'Key attributes of effectiveness in managing project portfolio', *International Journal of Project Management*, Vol. 33, No. 5, pp.1084–1097.
- Pinna, C., Demartini, M., Tonelli, F. and Terzi, S. (2018) 'How soft drink supply chains drive sustainability: key performance indicators (KPIs) identification', *Procedia CIRP*, Vol. 72, No. 1, pp.862–867.
- Pinto, M.B. and Pinto, J.K. (1991) *Determinants of Cross-Functional Cooperation in the Project Implementation Process*, Project Management Institute, Newtown Square, PA.
- PMI Standards Committee (2013) *A Guide to the Project Management Body of Knowledge*, 5th ed., Project Management Institute, Newtown Square, PA.
- Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y. and Podsakoff, N.P. (2003) 'Common method biases in behavioral research: a critical review of the literature and recommended remedies', *Journal of Applied Psychology*, Vol. 88, No. 5, pp.879–903.

- Pollack, J., Helm, J. and Adler, D. (2018) 'What is the iron triangle, and how has it changed?', *International Journal of Managing Projects in Business*, Vol. 11, No. 2, pp.527–547.
- Raziq, M.M., Borini, F.M., Malik, O.F., Ahmad, M. and Shabaz, M. (2018) 'Leadership styles, goal clarity, and project success: evidence from project-based organizations in Pakistan', *Leadership & Organization Development Journal*, Vol. 39, No. 2, pp.309–323.
- Rodríguez, N.G., Pérez, M.J.S. and Gutiérrez, J.A.T. (2008) 'Can a good organizational climate compensate for a lack of top management commitment to new product development?', *Journal of Business Research*, Vol. 61, No. 2, pp.118–131.
- Saeed, M.A., Jiao, Y., Zahid, M.M. and Tabassum, H. (2017) 'Relationship of organisational flexibility and project portfolio performance: assessing the mediating role of innovation', *International Journal of Project Organisation and Management*, Vol. 9, No. 4, pp.277–302.
- Sarker, S. and Lee, A.S. (2003) 'Using a case study to test the role of three key social enablers in ERP implementation', *Information & Management*, Vol. 40, No. 8, pp.813–829.
- Sauer, C., Gemino, A. and Reich, B.H. (2007) 'The impact of size and volatility on IT project performance', *Communications of the ACM*, Vol. 50, No. 11, pp.79–84.
- Shahu, R., Pundir, A.K. and Ganapathy, L. (2013) 'An empirical study on flexibility: a critical success factor of construction projects', *Global Journal of Flexible Systems Management*, Vol. 13, No. 3, pp.123–128.
- Shao, J. (2018) 'The moderating effect of program context on the relationship between program managers' leadership competences and program success', *International Journal of Project Management*, Vol. 36 No. 1, pp.108–120.
- Shaul, L. and Tauber, D. (2013) 'Critical success factors in enterprise resource planning systems: review of the last decade', *ACM Computing Surveys (CSUR)*, Vol. 45, No. 4, pp.1–39.
- Shenhar, A.J. and Dvir, D. (2007) *Reinventing Project Management: The Diamond Approach to Successful Growth and Innovation*, Harvard Business Review Press, Boston.
- Shenhar, A.J., Dvir, D., Lechier, T., Poli, M. (2002) 'One size does not fit all — true for projects, true for frameworks', *Proceedings of PMI Research Conference*, 14–17 July, Project Management Institute, Seattle, USA, pp.99–106.
- Shenhar, A.J., Dvir, D., Levy, O. and Maltz, A.C. (2001) 'Project success: a multidimensional strategic concept', *Long Range Planning*, Vol. 34, No. 6, pp.699–725.
- Sinaiko, H.W. and Brislin, R.W. (1973) 'Evaluating language translations: experiments on three assessment methods', *Journal of Applied Psychology*, Vol. 57, No. 3, pp.328.
- Skorstad, E.J. and Ramsdal, H. (2016) *Flexible Organizations and the New Working Life: A European Perspective*, Routledge Taylor & Francis Group, New York, NY.
- Solovida, G.T. and Latan, H. (2017) 'Linking environmental strategy to environmental performance', *Sustainability Accounting, Management and Policy Journal*, Vol. 8, No. 5, pp.595–619.
- Teller, J., Kock, A. and Gemünden, H.G. (2014) 'Risk management in project portfolios is more than managing project risks: a contingency perspective on risk management', *Project Management Journal*, Vol. 45, No. 4, pp.67–80.
- Terlizzi, M.A., de Souza Meirelles, F. and de Moraes, H.R.O.C. (2016) 'Barriers to the use of an IT project management methodology in a large financial institution', *International Journal of Project Management*, Vol. 34, No. 3, pp.467–479.
- Tiwari, P. and Suresha, B. (2020) 'Mediating role of project innovativeness between top management commitment and business benefits', *Kala Sarovar*, Vol. 2, No. 4, pp.359–377.
- Tiwari, P. and Suresha, B. (2021a) 'Moderating role of project innovativeness on project flexibility, project risk, project performance, and business success in financial services', *Global Journal of Flexible Systems Management*, Vol. 22, No. 1, pp.179–196.
- Tiwari, P. and Suresha, B. (2021b) 'Moderating role of project flexibility between top management commitment and project success in financial services', *ICCBP2021 International Conference on Changing Business Paradigm*, Management Development Institute, MDI, Gurgaon, India.

- Tushman, M.L. and O'Reilly, C.A. (1996) 'Ambidextrous organizations: managing evolutionary and revolutionary change', *California Management Review*, Vol. 38, No. 4, pp.8–29.
- Tzempelikos, N. (2015) 'Top management commitment and involvement and their link to key account management effectiveness', *Journal of Business & Industrial Marketing*, Vol. 30, No. 1, pp.32–44
- Unger, B.N., Kock, A., Gemünden, H.G. and Jonas, D. (2012) 'Enforcing strategic fit of project portfolios by project termination: an empirical study on senior management involvement', *International Journal of Project Management*, Vol. 30, No. 6, pp.675–685.
- Vrchota, J., Řehoř, P., Maříková, M. and Pech, M. (2021) 'Critical success factors of the project management in relation to industry 4.0 for sustainability of projects', *Sustainability*, Vol. 13, No. 1, p.281.
- Willcocks, L.P. and Sykes, R. (2000) 'Enterprise resource planning: the role of the CIO and its function in ERP', *Communications of the ACM*, Vol. 43, No. 4, pp.32–38.
- Winch, G.M. (2014) 'Three domains of project organizing', *International journal of project management*, Vol. 32, No. 5, pp.721–731.
- Wu, G., Liu, C., Zhao, X. and Zuo, J. (2017) 'Investigating the relationship between communication conflict interaction and project success among construction project teams', *International Journal of Project Management*, Vol. 35, No. 8, pp.1466–1482.
- Yamin, M. and Sim, A.K.S. (2016) 'Critical success factors for international development projects in Maldives: project teams' perspective', *International Journal of Managing Projects in Business*, Vol. 9 No. 3, pp.481–504 [online] <https://doi.org/10.1108/IJMPB-08-2015-0082>.
- Yang, L.R., Wu, K.S., Wang, F.K. and Chin, P.C. (2012) 'Relationships among project manager's leadership style, team interaction and project performance in the Taiwanese server industry', *Quality & Quantity*, Vol. 46 No. 1, pp.207–219.
- Yirenkyi-Fianko, A.B., Chileshe, N. and Stephenson, P. (2012) 'Critical success factors of risk assessment and management processes (RAMP) implementation in Ghanaian construction related organisations', *International Journal of Project Organisation and Management*, Vol. 5, No. 4, pp.379–396.
- Young, R. and Jordan, E. (2008) 'Top management support: mantra or necessity?', *International Journal of Project Management*, Vol. 26, No. 7, pp.713–725.
- Young, R. and Poon, S. (2013) 'Top management support – almost always necessary and sometimes sufficient for success: Findings from a fuzzy set analysis', *International Journal of Project Management*, Vol. 31, No. 7, pp.943–957.
- Zailani, S., Ariffin, H.A.M., Iranmanesh, M., Moeinzadeh, S. and Iranmanesh, M. (2016) 'The moderating effect of project risk mitigation strategies on the relationship between delay factors and construction project performance', *Journal of Science and Technology Policy Management*, Vol. 7, No. 3, pp.346–368.
- Zaman, U., Nawaz, S., Tariq, S. and Humayoun, A.A. (2019) 'Linking transformational leadership and 'multi-dimensions' of project success', *International Journal of Managing Projects in Business*, Vol. 13, No. 1, pp.103–127.
- Zhao, J., Du, B., Sun, L., Lv, W., Liu, Y. and Xiong, H. (2021) 'Deep multi-task learning with relational attention for business success prediction', *Pattern Recognition*, Vol. 110, No. 1, p.107469.
- Zwikael, O. (2016) 'Editorial – international journal of project management special issue on project benefit management', *International Journal of Project Management*, Vol. 34 No. 4, pp.734–735.
- Zwikael, O. and Meredith, J.R. (2018) 'Who's who in the project zoo? The ten core project roles', *International Journal of Operations & Production Management*, Vol. 38 No. 2, pp.474–492.