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Highlights

- Institutional pressures impact on IS adoption success via two success determinates
- Coercive and normative pressure influence the chosen project management approach
- Only mimetic but not normative pressure impacts project team competence
- Formality of the project management approach influences team competence
- Project management approach and team competence impact IS adoption success

The Impact of Legitimacy-Based Motives on IS Adoption Success: An Institutional Theory Perspective

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The Impact of Legitimacy-Based Motives on IS Adoption Success: An Institutional Theory Perspective

Abstract

Firms frequently adopt new information systems (IS). To better understand IS adoption, research focused on motives for an IS adoption. In this study, three legitimacy-based motives (coercive, mimetic, and normative pressure) are examined for their impact on two success determinants (i.e., project management approach and team competence) and the subsequent impact of the success determinants on IS adoption success. In a quantitative study of Australian firms, we found that coercive and normative pressure impact on the project management approach whereas mimetic pressure impacts on team competence. Both project management approach and team competence in turn impact on IS adoption success.

Keywords: IS adoption, institutional theory, adoption motives, project management approach, team competence.

1 INTRODUCTION

Across the globe, firms regularly initiate information systems (IS) adoption projects because these systems only are in operation for a few years (2-4 years) [35]. Even during economic crises, firms continue to adopt new IS [49]. Nevertheless, IS research and reports from practice show that firms struggle to complete there IS adoption projects successfully [57]. Many examples exist: Purao et al. [98] present a large-scale, public sector project that consumed more than 3 billion US$ but failed to deliver key IS functionalities. Similarly, in 2003, the fast food chain McDonalds failed in its attempt to adopt an enterprise resource planning system (ERP) that would centrally control the operational business of 30,000 restaurants [81].

To gain a better understanding of IS adoption and eventually be able to increase success rates of IS adoption projects, researchers have recommended to focus on understanding *why* adoption projects are initiated [77]. Consequently, the adoption motive, which represents the reason for initiating an IS adoption project, becomes the focal point [48]. The importance of motives in relation to IS adoption was demonstrated in prior studies that investigated the impact of motives on IS adoption intention [111; 116] and on IS usage and post-implementation assimilation of enterprise systems [65; 73]. However, little research has investigated the impact of adoption motives on IS adoption success. Knowing the extent to which motives impact on adoption success would provide theoretical and practical insights into the relationship between the reasons for IS adoption and its success.

This research examines IS adoption success by using institutional theory as the theoretical lens and thereby integrates DiMaggio and Powell's (1983) framework of three institutional pressures (i.e., coercive, normative, mimetic) with the literature on success determinants [23]. Institutional theory explains how motives, captured as the three pressures, prompt organizational behavior that in turn affects the success of that behavior. The theory suggests that a firm makes decisions based on its desire to be accepted (have legitimacy) by institutions in the firm's environment [82]. Although, this legitimacy seeking behavior ensures long-term survival of the firm in the environment, it constrains the firm's freedom to operate their

business. Nevertheless, firms can freely choose to use different success determinants when responding to the institutional pressures, this is, the firm can make resource choices about what and how much to commit to the IS adoption project. The combination of different success determinants allows a firm to maintain flexibility to successfully adopt the new IS.

Based on the considerations above, we hypothesize that three institutional pressures affect two success determinants (the project management approach and project team competence) and that these two success determinants impact on IS adoption success. To test the research model, data was collected from Australian firms and analyzed via structural equation modeling. Results show that coercive and normative pressure positively impact on the project management approach whereas mimetic pressure positively impacts on team competence. In turn, the project management approach and the competence of the project team impact positively on IS adoption success and the project management approach also influences project team competence.

The current research contributes to the body of literature on IS adoption success by investigating the impact of legitimacy-based motives on IS adoption success. Additionally, this research has implications for practice because it provides firms with knowledge in their efforts to successfully adopt IS, in particular, it enables firms to link motives with outcomes of IS adoption projects. The remainder of this paper is structured as follows. Next, theoretical foundations are discussed and hypotheses are developed. After this, the methodology is outlined and results are presented. Finally, conclusions are drawn.

2 THEORETICAL BACKGROUND

2.1 An Institutional Theory Perspective on IS Adoption

Institutional theory has been used in IS research to understand "*how institutions influence the design, use, and consequences of technologies, either within or across organizations*" [89, p. 153]. An institution is a social structure that formulates rules which provide firms and their organizational actors with behavioral guidance and recommendations for actions, while simultaneously controlling and constraining them in their choices [104]. Examples of such institutional rules include contracts, government regulations, and

non-binding industry norms [64]. It is a foundational assumption of institutional theory that firms and their organizational actors seek to achieve legitimacy which is "*the acceptance of the organization by its environment*" [67, p. 64]. Prior research argued that firms seek legitimacy because being accepted is critical for the organization to succeed and survive [82].

Institutional theorists DiMaggio and Powell [34] conceptualized the influences exerted by institutions on a firm as pressures, i.e. coercive pressure, mimetic pressure, and normative pressure. Together, these pressures are also referred to as isomorphic pressures because as different firms engage in similar behaviors to achieve legitimacy they become more similar over time [34]. The adoption of an IS can be an example of organizational behavior requested by institutions if the motive for the adoption is to gain legitimacy rather than maximizing the firm's efficiency [119]. At the core of DiMaggio and Powell's work are the three pressures that originate from different institutions in the environment (see Table 1).

Table 1: Overview of DiMaggio and Powell's three institutional pressures

	Coercive Pressure	**Mimetic Pressure**	**Normative Pressure**
Origin of the Pressure	*Power differences:* Institutions in a firm's environment directly or indirectly request that the firm engages in certain actions. The organizations are powerful enough to sanction or reward the firm's actions.	*Uncertainty:* The firm has insufficient information to solve a problem. The firm observes that organizations in the environment have successfully solved similar problems.	*Promotion of norms:* Institutions in the firm's environment define and promote norms but do not directly sanction compliance or non-compliance.
Firm's actions to the pressure	• Estimation of sanctions and rewards • Estimation of the organization's ability to monitor compliance • Estimation of the costs of compliance • Estimation in how far compliance is desirable • Initiation of actions required to achieve compliance	• Observation of behaviors by other organizations in the environment • Observation/estimation how successful the behaviors have been • Estimation of how successful the behavior could be in the firm • Mimicry of the behavior that seems suitable for the firm	• Estimation of positive and negative compliance consequences • Estimation of the costs of compliance • Estimation in how far compliance is desirable • Initiation of actions required to achieve compliance

Achieving legitimacy	Complying with the legal or inter-firm request	Imitating a behavior that is considered acceptable in the organizational environment	Identifying and complying with the norm
Examples	Firms complying with legal regulations defined by governmental agencies	Firm implements an ERP system due to observations that other firms successfully use their ERP systems to increase time-to-market	Firms complying with norms defined by the Institution for Standardization (ISO)

The organizational pursuit of legitimacy is an external influence [74] and therefore prompts and influences the organizational behavior of a firm. For example, coercive pressure – as an IS adoption motive – requests a firm to comply with the government regulations to implement section 404 of SOX (Sarbanes Oxley Act). This governmental regulation aims at enforcing stricter internal controls and accounting reporting attainable through improved IS functionality [12] that may or may not maximize a firm's efficiency. Yet, with the compliance request the government imposes external constraints on the firm, that is, the pressure constrains the firm's freedom to choose how to undertake the update of their accounting IS and as such can jeopardize the successful completion of the project [44]. Consequently, if the motives regarding the adoption of an IS are legitimacy driven, the external constraints may impact on IS adoption success.

IS researchers have used institutional theory to examine a number of IS-related phenomena [29; 82; 124]. Early studies that applied the lens of institutionalism can already be found in the late 1980s and early 1990s [82], but recently this theory has found increased application in IS research [29]. Very few IS studies have used institutional theory without consideration of the organizational or technological context [29]. In fact, most prior IS studies have integrated institutional theory with other IT-artifact focused theories or IT-contextual theories [29]. Richer and more nuanced insights can be gained about the adoption and diffusion of IT innovations when institutional concepts are integrated with other theories. For instance, combining DiMaggio and Powell's [34] three pressures with alignment theory, organizational visions theory, and strategic response theory showed that the adoption of a telehealth innovation in

different organizational fields failed because in each field the institutional pressures exerted different impacts, that means, differences manifested how the innovation diffused [13].

In their meta-review on the institutional perspective in IS research, Mignerat and Rivard [82] further classify the body of articles into three categories: The first category includes studies about the effect of institutional pressures on IT/IS innovations, including adoption, implementation and assimilation. The second category includes studies that describe how artifacts or disruptions trigger institutionalization processes, and the third category includes studies that show how IT may interact with institutions. Studies in the first category include research on the impact of institutional forces on the adoption of RFID [119], on the attitude of mangers towards green IT [47], and how individuals react to institutional pressures [117]. For example, strong coercive pressure by suppliers and customers forced a firm to adopt green IT. However, mimetic pressure from trading partners or competitors had no impact on the mangers' attitude to adopt green IT [47]. In the second category – institutionalization process – a study by Klein and Hirschheim [66] examined the legitimation of information systems development (ISD) approaches and explained how a shift in social norms may create a legitimate gap for ISD developers. For example, the social norm change to more customer representation during an ISD project makes approaches and methods illegitimate that ostracise customers and restrict their influence. In the third category – interactions between IT and insitutions – a study showed how the misalignemnt of an healthcare IS with the institutional arrangements in different hospitals hampered the successful deployment of this innovation [22].

In our study, we perform research in the first category, namely about the effect of institutional pressures on IT/IS innovations, particularly on IS adoption and the success of it. Yet, we conceptualize the pressures as motives of a firm to adopt an IS, an area that has not been not studied. Because Mignerat and Rivard [82] caution that researchers in the past confused other pressures a firm might experience (e.g., competitive pressures) with institutional pressures, we next present details of the three pressures.

2.2 Three Types of Institutional Pressures as Motives Driving IS Adoption Projects

2.2.1 Coercive Pressure

Institutional theory defines coercive pressure as pressure that stems from institutions in a firm's environment which directly formulate rules that a firm needs to comply with, and are powerful enough to directly reward compliance or sanction non-compliance [34]. These institutions use their power to force firms to engage in particular activities and thereby, they directly impose constraints on firms [87]. Institutions that exert coercive pressure include, for example, suppliers of scarce resources, customers who buy large portions of a firm's output, and government agencies [127; 129].

In the information age, coercive pressure is often related to the IS of a firm [73]. For example, large customers often request suppliers to adopt supply chain management systems that are compatible with the customers' order management systems [118]. Further, compliance with laws and government regulations often requires firms to make changes to their IS, or even adopt completely new IS [68]. The stronger a firm depends on organizations in the environment, and the fewer possibilities the firm has to avoid negative sanctions, the stronger becomes the coercive pressure, and the more will a firm be inclined to change its IS and adopt new IS if necessary [73; 116].

2.2.2 Mimetic Pressure

Mimetic pressure is defined as pressure that stems from behavioral uncertainty on how to solve a specific problem, perform a specific activity or reach a specific goal. As a result of this uncertainty, a firm imitates behavior performed by a seemingly successful institution (e.g., organization) in the firm's environment [87]. The imitation is referred to as mimicry. Normally, decision makers in firms believe that a behavior of other similar institutions is easy to imitate because the chance of success seems higher if the behavior was successfully performed before. As a result, firms are likely to mimic organizations that either operate in similar markets, use similar resources, or sell similar products [116]. Thus, behaviors performed by similar organizations are perceived to be appropriate for a firm that engages in mimicry [34].

In the information age, various organizational challenges can be addressed through the use of IS [73]. Yet, a firm might not have the 'right' IS to address the challenge and thus, engages in mimicry through initiating an IS adoption project. Typical situations that drive firms to imitate other organizations and their IS include strategic uncertainty about which IS should be selected or how the IS can support the firm's business processes [7]. Information about other organizations' IS is, in many cases, available. For example, providers of ERP systems publish on their websites information about reference customers and their ERP solutions (see SAP or Oracle websites).

2.2.3 Normative Pressure

Normative pressure is defined as pressure that stems from norms specified by institutions such as professional or industry associations. Normative pressure differs from coercive pressure in so far as institutions that exert normative pressure have no authority to directly enforce compliance and sanction non-compliance [34]. Thus, normative pressure does not affect firms through coercion; rather, firms comply with norms because decision makers identify themselves with particular industrial and professional institutions. As a result, decision makers believe that compliance with norms specified by the professional and industry institutions is beneficial for their firm [90]. An example of an institution exerting normative pressure is the International Standardization Organization (ISO) which has no authority to impose sanctions on firms that do not comply with ISO norms [97]. Nevertheless, firms comply with ISO norms and become ISO-certified because key decision makers, such as customer managers or technical managers, believe that compliance helps firms attract additional customers and to appear more competent [122].

2.3 Resource-Related Decisions as Firms' Responses to Institutional Pressures

Using an institutional lens to investigate IS adoption success allows for considering the pursuit of legitimacy as the paradigm for organizational decision-making. However, as DiMaggio and Powell [34] posit, institutional isomorphism (i.e., homogeneity of structures) leads firms and their organizational actors to become more similar with each other over time. Firms need to be, however, diverse to remain competitive [96]. To achieve this diversity, firms may respond to the institutional pressures differently

regarding the resources they dedicated to the project. For example, firms may differ on which resources to allocate to a project or how the resources shall be managed. The focus on resource-related decisions integrates the resource-based view [125] into institutional theory [88]. Research has shown that different institutional pressures are associated with different choices of resources which in turn affect the success of macro organizational behaviors [88]. Hence, it is reasonable to assume that some resource-related determinants are impacted by pressures and impact on adoption success.

Prior IS research has identified and ranked a number of potential success determinants for IS adoption and implementation projects [2; 110]. In these rankings, two success determinants, namely project team competence and the project management approach are repeatedly ranked among the top five factors. Furthermore, these two success determinants have been identified as crucial root causes that are responsible for projects sliding into a crisis [2] and the DeLone and McLean IS success model refers to competences (i.e., skills) and planning as critical factors for adoption success [91]. In addition, both project management approach and project team competence represent resource-related determinants which are under the control of the firm and a team [23; 126]. For these reasons, we focus in our study on the project management approach and project team competence as the two success determinates that are impacted by institutional pressures and have an impact on IS adoption success.

Project management approach: The project management institute (PMI), the largest professional association dedicated to project management [100], defines project management "*as the application of knowledge, skills, tools, and techniques to project activities in order to meet project requirements*" [94, p. 368]. Examples of activities undertaken to meet project requirements include the development and implementation of resource plans [115], selection of team members for the project [39], and the definition, monitoring, and control of project milestones [112]. Two approaches to project management exist: informal project management [71] and formal project management [61].

Informal project management largely relies on the intuition of the project manager [43] and is characterized by a deliberate lack of project documentation [71]. By contrast, formal project management

applies standardized techniques to ensure that project requirements are met [26]. Throughout the project, outcomes of these standardized techniques are formally documented and monitored [62]. Standardized project techniques are either defined by the firm or by professional associations such as the PMI [26]. Examples of standardized techniques include formal project schedules, staff plans and budget plans [94].

Prior research has produced mixed findings regarding the decision of a firm to apply a formal and/or informal project management approach [93]. While some researchers highlight how the informal project management approach facilitates flexibility, creativity and knowledge sharing [85], others have pointed to the benefits of the formal approach. For example, a formal project management approach has a stronger focus on strategy which allows identification of more strategic opportunities and ensures alignment with business objectives [68]. In fact, methodical planning and calculated managing of projects are seen as a way to master the complexity of IS projects [109]. Furthermore, positive impacts on team performance regarding meeting milestones and firm deadlines were identified when formal project management practices were used [46]. Finally, IT planning was identified as a key variable that can influence IS success [91]. Hence, IS adoption projects can leverage these benefits when using a formal project management approach [86].

Project team competence: Project team competence is defined as the level of skills and knowledge of the project team, i.e. the employees and external consultants, who are assigned to work towards completion of the project [52]. Project teams with high levels of competence embrace the skills and knowledge required for the successful completion of a particular IS project [126]. Prior research suggested evaluating the level of competence using three components, namely (1) the team members' technical competence [6], (2) managerial competence [9; 113], and (3) the project team's access to competence resources [11; 18].

Technical competence includes competence required for the technical development and implementation of an IS, including programming competence [78], software testing competence [18], and hardware-related competence [58]. This type of competence normally sits with the developers creating or implementing the IS [91]. Managerial competence required for IS adoption projects includes competence

required to plan, monitor, and evaluate adoption projects [105]. It also captures the project management skills of the project manager [91]. Examples of access to competence resources include access to databases, knowledgeable experts, or specialist literature.

2.4 IS Adoption Success

IS go through a three-stage lifecycle: the first stage is the decision to adopt, the second stage is the IS adoption, and the third stage is the usage of the IS [8]. In prior research, many definitions for the second stage exist: IS adoption is defined either as a strategic management decision to adopt an IS [72], a user's deployment of the IS such that adoption begins when users start using a system for their regular tasks [16], or as the outcome of an IS adoption project [60]. When understanding adoption as a project outcome, the focus is on the IT project during which the firm becomes capable of using an IS. A project is composed of a set of discontinuous activities that are not part of the firm's operational business [36]. Activities during an IS adoption project include the development and implementation of technical components by the project team [18], as well as process adjustments and training related to the introduction of the new IS [38].

In this research, we use the project-based adoption definitions because prior research has attributed success and failure of projects to how a technology is implemented in a project [57; 101]. Hence, using a definition that is concerned with the project allows us to better understand this issue. A project-based definition further enables the identification of a point of time when the adoption process is completed and adoption success can be measured. This point of time is the official closure of the IS adoption project. Once the IS adoption project has been closed, and the firm has become capable of using the IS, adoption success does not change any more [60], and thus, a final value of adoption success can be measured.

In following prior research, the project-based adoption uses three criteria that define adoption success [70; 106; 126]. First, a project needs to be completed within the original budget as determined initially which means the budget must neither be exceeded nor increased in retrospective [84; 130]. Second, the project needs to be finished by the completion date specified in the original project schedule [3; 40]. Third,

all technical specifications determined in the original project scope must be implemented in a correct and error-free manner [1; 70].

3 HYPOTHESIS DEVELOPMENT

Our research model is illustrated in Figure 1. It presents graphically the effect of three institutional pressures on two resource-related success determinants and these resource-related success determinants impact on IS adoption success.

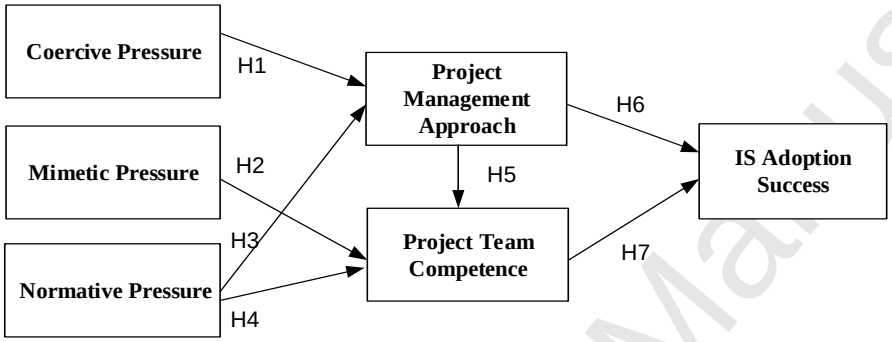

Figure 1. Research model

3.1 Effects of Institutional Pressures on Resource-Related Success Determinants

3.1.1 Coercive Pressure and Project Management Approach

In the absence of coercive pressure, a firm is free to select a technical architecture (software and hardware) and schedule a project in a way that best fits with the firm's strategy. However, when an IS adoption is driven by coercive pressure, these decisions are determined by the institution that exerts the pressure [69]. For example, firms may be forced to implement a particular IS with a certain functionality to a set deadline, that is, firms experience constraints with regards to the IS adoption [12; 56]. Because the external constraints give no special consideration to a firm's individual circumstances [87], they are most likely in conflict with the firm's usual practices for IS adoption projects. Consequently, the firm might be forced to follow conditions set by the institution and therefore departs from its usual practices, including how firms normally manage their projects.

For projects high in coercive pressure, the use of formal project management techniques is encouraged because schedules and technology features are predefined through formal or semi-formal description of the project scope and high-level project schedules [12]. When undertaking the project, firms must align their project management to these details. For example, firms which adopt an IS to achieve compliance with government regulations such as the Sarbanes-Oxley Act, develop formal project schedules based on particular sections of the regulations [83]. Furthermore, the formal project management approach allows for improved planning and estimation of project resources and subsequently, facilitates the use of existing resources as efficiently as possible [26]. As a result, the likelihood that project milestones and deadlines are adhered to increases [123].

Hence, formal project management helps to ensure project success in situations when projects must be completed within externally defined non-negotiable constraints [59]. The stronger coercive pressure becomes, the more firms are restricted by externally defined conditions [68] and the more likely they will use formal project management. Therefore, with increasing levels of coercive pressure [116], firms are more likely to use the externally defined requirements to put a formal project management approach in place.

H1: The strength of the coercive pressure motive has a positive effect on the formality of the project management approach.

3.1.2 Mimetic Pressure and Project Team Competence

Institutional theory states that mimetic pressure motivates a firm to adopt an IS in situations when key decision makers in the firm observe that other organizations successfully adopted and now use similar IS [116]. The extent to which decision makers have the relevant information and thus, are able to observe organizations in the environment depends on how these organizations present themselves, or are being presented, in public. Vendors, for example announce successful IS adoption projects on their websites, in addition to information that is available in the press, or other public forums.

Information about unsuccessful IS adoption projects also finds its way into the public space through professional IT journals or newspapers. For example, in July 2012, *The Australian* reported how Queensland Health failed to implement a new payroll system, which left workers for weeks *"with little or no pay"*. The project, managed by IBM, *"was over 18 months after the scheduled Go-Live date and approximately 300 per cent over the original cost budget"* [99]. Similarly, in December 2012, the *New York Times* reported the termination of a six-year long and 1 billion US$ IS project for the US Air Force because "*the Air Force realized that it would cost another $1 billion just to achieve one-quarter of the capabilities originally planned - and that even then the system would not be fully ready before 2020"* [114].

As a result, managers know about successful and unsuccessful IS projects in other organizations, however, they possess little detailed information about how the IS was implemented, which configurations and customizations were done and what existing IS were integrated with the new IS. Because of this lack of information and knowledge about failed IS adoption projects, decision makers are overly careful in their resource-related decisions for the IS projects. Consequently, it can be expected that decision makers committed sufficient resources, including a competent team, to the project to ensure the firm is capable of implementing the IS [28]. For example, decision makers may hire new staff for the IS adoption project or provide extra training for the project team [2]. These resources are then available for the entire project providing a stable level of knowledge and expertise in the team. Further, when decision makers believe that the tasks involved in the project are difficult, they allocate their best available people to the project team [103]. As a result, under conditions of high mimetic pressure, it is expected that the project team possess a high degree of competence required to complete the IS adoption project.

H2: The strength of the mimetic pressure motive has a positive effect on the level of project team competence.

3.1.3 Normative Pressure and Project Management Approach

Normative pressure occurs when key decision makers identify with a particular professional or industry association, and subsequently engage in activities to achieve compliance with the respective norms defined by the association [34; 90]. Prior research has shown that the identification of a person within an association develops through exposure to the norms defined by the association. The exposure is mostly a result of the decision maker's professional experience and may have already taken place during formal training (e.g., university education) [90].

Because some norms are highly structured and therefore suited for a formal project management approach [56], decision makers encourage the use of formal project management approaches. At the same time, when decision makers strongly identify with and believe in the association and their norms they want to make ensure that norms are successfully implemented. This objective can be achieved through a formal project management approach because it provides enhanced control and monitoring of project progress. Consequently, the stronger normative pressure becomes as an adoption motive, the more likely a decision maker selects a formal project management approach.

H3: The strength of the normative pressure motive has a positive effect on the formality of the project management approach.

3.1.4 Normative Pressure and Project Team Competence

Normative pressure also impacts on the competence of the team in such a way that when key decision makers identify with a particular association and their norms, they normally possess knowledge about the association and the norms either through their professional experience or formal education. Consequently, key decision makers have knowledge that is important to successfully undertake the project [120], but also about the skills and knowledge required by the team [121]. Thus, decision makers are motivated to select a project team that possesses the necessary competence to complete the IS adoption project successfully. Once skilled and knowledgeable team members have been selected to the team and are not transferred or replaced, the team possesses the expertise to perform consistently at a high level. The stronger normative pressure becomes as an adoption motive, the more likely a competent project team is assembled.

H4: The strength of the normative pressure motive has a positive effect on the level of project team competence.

3.2 Effects between Resource-Related Success Determinants and on IS Adoption Success

3.2.1 The Effect of Formal Project Management on Project Team Competence

Project management encompasses the formal planning of staffing for the project and the ongoing monitoring of staff performance. Prior to the commencement of the project, team members are allocated to the project given the project's tasks and objectives [107]. This allocation is done either by the project manager or a functional manager based on people's competences [4]. The resulting alignment between project needs and competences (e.g., technical and managerial) contributes positively to team performance [75]. Throughout the project, project managers utilize a highly formal staff plan to efficiently use people allocated to the project team [123]. If project team members get involved in tasks which are not necessary for the completion of the project, project managers can use formal staff plans to detect this problem and ensure that team members work on tasks required for the project to progress.

H5: The formality project management approach has a positive effect on project team competence.

3.2.2 The Effect of Formal Project Management on Adoption Success

Prior research has shown that a high level of formal project management provides increased control over project resources and enables monitoring that resources are used in an efficient way [3]. Enhanced control allows for better planning to ensure a successful project, but also provides early indicators about the project going off track. For example, a highly detailed formal budget plan gives project managers a high level of control over project funds and enables them to define measures that ensure an efficient use of the budget. Furthermore, IT planning improves system and information quality [91]. As a result, adherence to project schedules and budgets becomes more likely [2] and hence, it can be expected that the project will be completed on time, on budget, and within specs; all key criteria for a successful IS adoption [126].

H6: The formality of the project management approach has a positive effect on IS adoption success.

3.2.3 The Effect of Project Team Competence on IS Adoption Success

Prior research has outlined the importance of project team competence for IS adoption success [126]. A high level of technical competence, including programming competence [78] and software testing competence [18] ensures that technical specifications are implemented correctly, and thus, delays and budget overruns resulting from implementation errors are avoided [2]. Indeed, the capabilities and knowledge of developers who create or implement an IS are positive factors for achieving system quality [91]. A high level of project management competence by a project manager contributes to adoption success because it enables project teams to carefully plan and frequently control the progress of a project, and hence, ensure the adherence to deadlines and budget plans [123]. Sufficient access to external knowledge resources such as databases or knowledgeable experts enables project teams to mitigate any lack of competence that might occur during the project [113], and thus, it helps to avoid errors [6].

H7: The level of project team competence has a positive effect on the level of IS adoption success.

3.3 Control Variables

Prior studies indicate that IS adoption success might be influenced by factors that are not included in the research model. Therefore, following best practices in research [108], we included type of IS, firm size, and length of the project as control variables.

Type of Information Systems: We distinguish between types of IS, i.e. personal application systems (e.g., spreadsheet systems and graphics systems) and enterprise systems (e.g., customer relationship management systems and ERP systems) [27]. Although studies on IS adoption success focused mainly on enterprise systems [60; 126], firms undertake adoption projects that cover a range of IS. Thus, it is possible that IS adoption success depends on the system type implemented. To account for any possible effect of the system type on IS adoption success it was introduced as a control.

Firm Size: It is currently not clear how firm size affects IS adoption success. It is possible that large firms adopt IS more successfully; either because they provide necessary resources or they possess better formal project management (Liang et al. 2007). In addition, firms of different sizes might be affected by different

government regulations and thus, experiences institutional pressures differently [30]. Hence, we also include firm size as a control.

Project length: IS adoption project vary in length which may indicate how difficult and complex the project and or the technology is [128]. Thus, it is possible that shorter projects are more successful than longer projects. To account for an effect of project length, we also included this factor as a control.

4 METHODOLOGY

4.1 Sample and Participants

Data collection targeted IT managers and project managers who were directly involved in their firms' IS adoption projects. These participants were selected because prior research demonstrated that managers possess knowledge of project outcomes (success/failure), of success determinants, and of adoption motives [25; 55]. Hence, managers can be expected to be competent to assess IS adoption projects for the purpose of this research.

An Australian survey panel vendor was used to for the data collection. The panel vendor put several mechanisms in place to verify the identity of survey participants, including technical measures and an incentive scheme. The researchers reviewed the measures before commencement of the data collection and found that they were appropriate to confirm the participants' identities. A total of 142 responses were received (response rate of 23%). This response rate compares favorably to other online surveys [24], and is in line with response rates for studies that target organizational members [17]. Demographics of the sample are presented in Table 1.

Table 2: Demographic details

	Frequency	Percentage
Industry		
Manufacturing	19	13.4
Finance and Business Services	24	16.9

Communication	28	19.7
Education	18	12.7
Healthcare	8	5.6
Trade	10	7.0
Construction	9	6.3
Electricity, Gas and Water	4	2.8
Transportation and Storage	3	2.1
Agriculture, Forestry and Fishing	4	2.8
Tourism and Cultural Services	5	3.5
Other	10	7.2
Number of Employees		
Less than 20	37	26.1
Between 20 and 49	22	15.5
Between 50 and 99	10	7.0
Between 100 and 200	9	6.3
More than 200	63	44.4
missing	1	0.7
Time since completion of IT project		
0-3 months	53	37.3
4-6 months	29	20.5
7-12 months	32	22.5
More than 12 months	28	19.7

4.2 Measurements

We used existing measures to operationalize the constructs because our literature review showed that well-established measures existed for all constructs. The instrument is included as an Appendix.

The scales for the three institutional pressures were adapted from Teo et al. [116] and Liang et al. [73]. As suggested in the literature, coercive pressure was modeled as a second-order formative construct that is formed by three first-order constructs: (1) coercive pressure from suppliers as a four-item reflective construct adapted from Teo et al. [116]; (2) coercive pressure from governments as a three-item reflective construct adapted from Liang et al. [73]; and (3) coercive pressure from customers as a three-item reflective construct adapted from Liang et al. [73]. Mimetic pressure was measured as a five-item reflective construct and normative pressure as a four-item reflective construct, both were adapted from Teo et al. [116] and Liang et al. [73]. Formal project management was adapted from Martin et al. [79] as a three-item reflective construct. The project team competence construct was adapted from Wixom and

Watson [126], Bassellier et al. [6], and Stratman and Roth [113] as a five-item reflective construct. The first item is taken from Wixom and Watson [126], the second to forth item from Stratman and Roth [113], and the fifth item from Bassellier et al. [6]. IS adoption success was measured as a three-item reflective construct adapted from Wixom and Watson [126].

Minor adjustments of the wording of some items were done to ensure they capture the context of IS adoption driven by institutional pressures. Before administering the survey, we sought input from an expert panel to validate and refine the research instrument [76]. A panel of six academics with research expertise on IS adoption, IS usage, culture, and IS adoption success was asked to assess the appropriateness of the survey instrument. In addition, we involved a practitioner panel of IT consultants and IT managers to assess the understandability of the questions. Feedback from both expert panels suggested that our instrument was appropriate and understandable.

Before commencing with the main study, we pilot-tested the research instrument [33] using IT managers listed in the Australian business database *Who's Who.* We received 69 valid responses. To test the reliability of the constructs, correlation coefficients (i.e. Cronbach's Alpha) were calculated. All coefficients indicated an acceptable level (above 0.7), thus confirming the validity of the research instrument [53]. Nevertheless, one coefficient (project management approach) was unusually high (α = 0.98). To address this potential problem, we randomly distributed the items measuring this construct on different pages of the questionnaire.

4.3 Data Analysis

The statistical analysis was performed using structural equation modeling (SEM), a multivariate technique for data analysis that simultaneously estimates the structural model between latent variables and the measurement models of each latent variable [53]. Partial least squares (PLS) was chosen for this research because it is highly suitable for theory building and initial examinations of relationships between constructs. By contrast, other SEM-approaches are more appropriate to re-test previously identified

relationships [21]. As this research is a first attempt to examine this research topic, PLS was considered suitable.

5 RESULTS

5.1 Measurement Model

Self-reported data may be affected by common method variance [14]. In addition to procedural remedies, such as ensuring anonymity and randomizing the survey questions, we performed a Harman's single-factor test to examine if common method bias might have been a problem in this study [76; 95]. We performed a factor analysis (principal axis factoring extraction method) to test whether only one factor emerges and to see whether one single factor accounts for the majority of the variance. Our results demonstrated that we produced a multi factor solution and the "largest" factor explains only 35.5% of the variance. Thus, common method bias does not seem to be of concern.

Reliability of the constructs was determined via Cronbach's Alpha. For all constructs, Cronbach's Alpha was found to be above the threshold of 0.7, indicating an acceptable level of reliability [53]. Additionally, we also examined the constructs' composite reliability. Again, all values were above 0.7, indicating an acceptable level of reliability [53]. Convergent validity of the constructs was determined by calculating the average variance extracted (AVE) and by examining the indicator loadings [42]. AVEs and loadings were above the recommended threshold of 0.6 [20], providing support for convergent validity. Results are presented in Table 3.

Table 3: Quality criteria for research model constructs

Construct		Item	Means	SD	Factor loadings	Cronbach's α	Composite reliability	AVE
Coercive pressure	Coercive pressure from government	COPG1	3.46	1.912	0.8893**	0.849	0.909	0.768
		COPG2	3.80	1.926	0.8647**			
		COPG3	3.17	1.837	0.8754**			
	Coercive pressure from suppliers	COPS1	4.23	1.630	0.9067**	0.903	0.932	0.775
		COPS2	3.97	1.786	0.8507**			
		COPS3	4.58	1.608	0.8953**			
		COPS4	4.27	1.584	0.8674**			
	Coercive pressure from customers	COPC1	4.65	1.803	0.7582**	0.695	0.829	0.618
		COPC2	5.13	1.634	0.8181**			
		COPC3	3.87	1.771	0.7815**			

Mimetic pressure	MIPR1	4.20	1.518	0.8557**^	0.913	0.934	0.740
	MIPR2	4.33	1.500	0.8487**^			
	MIPR3	4.44	1.480	0.8800**^			
	MIPR4	4.18	1.489	0.8376**^			
	MIPR5	4.35	1.512	0.8795**^			
Normative pressure	NOPR1	4.53	1.825	0.8324**^	0.808	0.870	0.626
	NOPR2	4.54	1.765	0.7927**^			
	NOPR3	3.42	1.979	0.7251**^			
	NOPR4	3.94	1.934	0.8112**^			
Project team competence	TCOM1	5.30	1.336	0.8696**	0.925	0.944	0.770
	TCOM2	5.30	1.294	0.8885**			
	TCOM3	5.08	1.384	0.8728**			
	TCOM4	5.26	1.356	0.8946**			
	TCOM5	5.09	1.468	0.8621**			
Project management approach	PRMA1	4.67	1.614	0.9153**	0.873	0.922	0.797
	PRMA2	4.46	1.645	0.8699**			
	PRMA3	4.42	1.638	0.8921**			
IS adoption success	IMPS1	4.67	1.408	0.8593**	0.822	0.893	0.736
	IMPS2	4.84	1.361	0.8289**			
	IMPS3	4.83	1.487	0.8852**			
[**: p < .01]							

Discriminant validity was determined by examining the square root of the AVEs in relation to the inter-construct correlations [42]. Table 4 illustrates that none of the inter-construct correlations were larger than the square root of the AVEs. Hence, we conclude an acceptable level of discriminant validity as achieved.

Table 4: Discriminate validity assessment

Construct	Mean	SD	COPG	COPS	COPC	TCOM	PRMA	ISAS
Coercive pressure from government – **COPG**	3.48	1.65	0.877					
Coercive pressure from supplier – **COPS**	4.26	1.45	.453**	0.880				
Coercive pressure from customers – **COPC**	4.55	1.36	.371**	.524**	0.786			
Project team competence – **TCOM**	5.21	1.20	.153	.226**	.200*	0.878		
Project management approach – **PRMA**	4.52	1.46	.332**	.469**	.189*	.382**	0.893	
IS adoption success – **ISAS**	4.78	1.23	.115	.163	.117	.582**	.328**	0.858

5.2 Structural Model

The hypotheses were tested by evaluating the path coefficients in the PLS model and their respective significance levels using the SmartPLS 2.0 software. A bootstrapping procedure with 200 samples was applied. Figure 2 shows the results of testing our hypotheses. We explain 25% of variance in project

management approach, 21% variance in project team competence, and 42% of variance in IS adoption success. The control variables type of IS and project length were not significant, but firm size was significant.

H1 stated that coercive pressure positively impacts on the formality of the project management approach. This hypothesis was supported (β=0.328, T=3.215, $p < 0.01$). H2 stated that mimetic pressure has a positive effect on project team competence; this hypothesis received support (β=0.187, T=2.173, $p < 0.01$). Further, it was stated that normative pressures positively impacts on the formality of the project management approach (H3) and on project team competence (H4). Hypothesis H3 was supported (β=0.241, T=2.576, $p < 0.01$) however hypothesis H4 (β=0.159, T=1.393, ns) was not supported. H5 stated that a formal project management approach positively impacts on project team competence. This hypothesis was supported (β=0.234, T=2.311, $p < 0.01$). H6 stated that the formality of the project management approach positively impacts on IS adoption success. This hypothesis also received support (β=0.257, T=2.876, $p < 0.01$). Finally, H7 stated that project team competence positively impacts on IS adoption success. This hypothesis was also supported (β=0.531, T=6.784, $p < 0.001$).

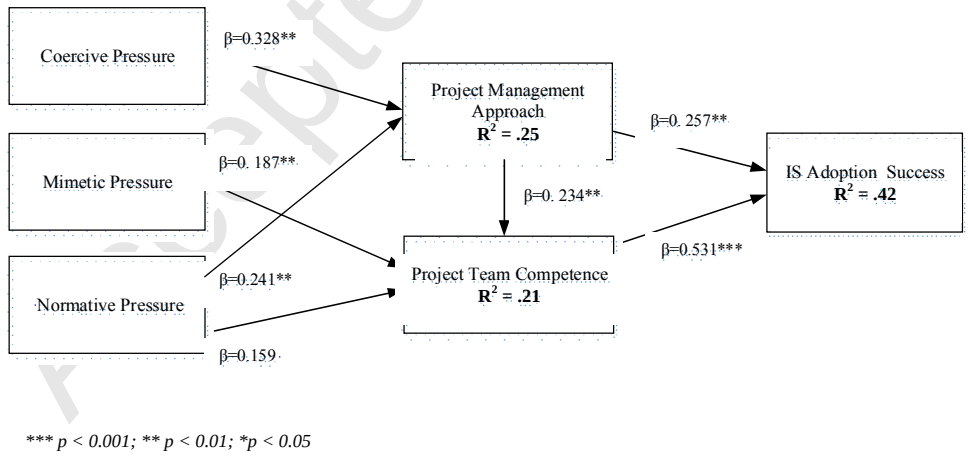

Figure 2. Results of the structural model

5.3 Post-hoc Analyses

The purpose of our study was to develop a parsimonious model to explain the impact of institutional pressures on the success determinates and subsequently their impact on IS adoption success. Because we

were seeking to develop a parsimonious model rather than a complete account of all the ways in which institutional pressures affect adoption success, we made no assumption regarding full or partial mediation. However, it is useful to consider the results of mediation tests to understand the practical implications of our findings. For our mediation analysis, we follow the guidelines by [5], [102], and [131] and perform a bootstrapping procedure based on [54]. Table 5 presents the direct effect, the indirect effect, and the total effect so as to conclude about meditation via VAF (Variance Accounted For).

Table 5: Mediation analysis

Relationship	Direct effect (X→Y) without mediator	Indirect effect	Total effect	VAF	Outcome
CoerciveP (X)→ Manag.Approch→Adoption Success (Y)	0.065 (ns)	0.084**	0.149	0.415	partial mediation
CoerciveP (X)→ Manag.Approch→ TeamCompetence → Adoption Success (Y)	0.065 (ns)	0.041**	0.106	0.615	partial mediation
MimeticP (X)→ TeamCompetence→ Adoption Success (Y)	0.112 (ns)	0.095**	0.207	0.542	partial mediation
NormativeP (X)→ Manag.Approch→ Adoption Success (Y)	0.404**	0.062 (ns)	0.466	-	no mediation
NormativeP (X) → TeamCompetence→ Adoption Success (Y)	0.404**	0.084 (ns)	0.488	-	no mediation
NormativeP (X)→ Manag.Approch→ TeamCompetence → Adoption Success (Y)	0.404***	0.030 (ns)	0.434	-	no mediation

***<0.001; **p< 0.01; ns = "*not significant*"
VAF>0.80="full mediation"; 0.20<VAF<0.80="partial mediation"; VAF<0.2= "no mediation"

6 DISCUSSION

This research investigated the relationship between three institutional pressures (coercive, mimetic, and normative) as motives for IS adoption and the related success of the IS adoption project. This relationship was mediated by two resource-related success determinants (project management approach and project team competence) that also had an impact of one on the other. DiMaggio and Powell's school of institutional theory served as our theoretical foundation and was integrated with the literature on resource-related success determinants. The results of our empirical study supported the hypotheses with the exception of one relationship. In the following, we first discuss the main findings and then, present the theoretical contributions and practical implications in more detail.

6.1 IS Adoption Motives and Success: The Role of Institutional Pressures and Success Determinants

We found support for the hypotheses that coercive and normative pressure influence the firm's chosen project management approach. Results demonstrate that these two pressures have a positive influence on how formal the project management undertaken is. Adopting a highly formal project management approach includes detailed structuring of implementation steps and this is eased when the norms and regulations provide a high degree of structure. Choosing a more formal project management approach would enable firms to avoiding sanctions from non-compliance.

When considering normative pressure, professional and industry associations need to "court for compliance" which could be achieved through intensifying the identification process of key decision makers with an institution and their norms. To support this process, professional associations may want to strengthen their relationships to member organizations. Building inter-firm networks with a common culture, where member firms share similar values [41], may be one initiative professional associations can pursue to achieve norm prevalence that translates into compliance.

We also found support for our hypothesis that mimetic pressure has a positive effect on project team competence. In situations when mimetic pressure is the IS adoption motive, a more competent project team is selected. Imitating other organizations from the institutional environment, which are similar to the firm, appears to be a successful approach to enrich the firm's learning experience [116]. Knowledge about the other organization's project team competence may be acquired through public information but also through headhunting members from their project teams. Our findings are supported by prior research on selection choices for information technologies. Tingling and Parent [117] demonstrated that decision makers would rather imitate another organization's information technology choice than follow recommendations produced internally, that is, a decision maker would discard results from an internal evaluation of different technology alternatives in favor of copying another organization's choices.

In addition, we had predicted that normative pressure is associated with project team competence. This hypothesis did not receive support. When it comes to the selection of members for the project team, the influence and subsequent identification process by organizational decision makers with a professional or industry association is less pronounced. In this case, the norms and guidelines promoted by these institutions do not trigger compliance behaviors. It may be possible that decision makers are aware of the skills and knowledge required to successfully complete the IS adoption project, but do not act on this information. This result suggests that for IS professionals in Australia their industry association might be challenged to build a common cognitive base about the importance and the process of team member selection.

Furthermore, we anticipated that an influence between the two resource-related success determinants exists, namely that the formal project management approach impacts on team competence. We received support for this relationship. Formal project management is seen as a basic requirement for projects. It facilitates control and monitoring of all project relevant activities, including the selection of the team members. Indeed, formal project management can ensure that the team has a diverse set of skills (managerial and technical) and that the team has access to knowledge resources necessary for the project. Thus, we could show that this relationship is also true under conditions where the adoption of an IS is driven by legitimacy-based motives.

Finally, we investigated the impact of the formality of the project management approach and project team competence on IS adoption success. As expected, results confirmed that these two actionable success factors have a positive impact on IS adoption success. The formality of the project management approach seems perfectly suited to govern and formally control a project with regards to project schedule, project budget, and project scope. As research on formal controls in software development projects has shown, formal outcome controls – in form of budget plans, schedules, and scope descriptions but also competent teams – facilitate the attainment of project goals [80]. Thus, both aspects; project team competence and the project management approach are crucial for a project to succeed and decision makers should be cognizant

of this aspect. It is particularly important when the firm's motive for an IS adoption is gaining legitimacy rather than maximizing efficiency. Having a highly competent team undertaking the IS adoption project also reduces process uncertainty as these team members can draw from their rich repertoire of experiences with IS projects [6]. As a result, the likelihood of success increases.

Although the positive impacts of formal project management approaches and project team competence have already repeatedly been demonstrated in prior research, the confirmation of H6 and H7 still has novel implications in the context of IS adoption project motivated by legitimacy-based motives. The support of H1 to H3 demonstrates that legitimacy-based motives affect project team competence and the project management approach. The confirmation that the two success determinants affect success shows that when adoption is triggered by legitimate-based motives and not rational, value maximization motives, the project management approach and project team competence still have an effect.

The results of our mediation analysis remind us that our results do not imply that normative pressure is not important. First, normative pressure impacts on project management approach. Secondly, normative pressure has a direct effect in IS adoption success. Hence, it is possible that other factors than project team competence exist that mediate the relationship between normative pressure and IS adoption success. Potential factors may stem from the area of formal education of the key decision maker that would capture where they were educated, what knowledge they were taught, and who offered the education. Knowing these aspects can account for the identification of the key decision maker with a particular association and their norm as essential for normative pressure.

6.2 Theoretical Contributions

This research makes several contributions to theory. First, this research is an initial attempt to investigate relationships between IS adoption motives and adoption success, and hence, the results of this research provide new insights into adoption success. Based on DiMaggio and Powell's [34] school of institutional theory, we theorized that three legitimacy-based motives affect adoption success, and that this effect is mediated by two success determinants. Thus, when studying the success and failure of IS adoption

projects, it is important that researchers go back to the time before the project began, and ask *why* the project was initiated. Furthermore, in examining adoption motives, this research provides new insights into factors that affect success determinants. This is of particular importance because so far, success determinants have mainly been treated as independent variables in prior research [2; 126].

Second, this research contributes to institutional theory by enriching the knowledge about the influence of isomorphism within the context of IS adoption projects. As institutional theory states, firms become more similar to each other over time due to activities performed in response to institutional pressures. This research shows that the process of becoming similar is also enabled by a firm's IS adoption decision. That means firms' exposure to similar institutional pressures leads to increased similarity over time because they all respond to these pressures by initiating IS adoption projects. In the course of these projects, similar decisions with regard to resource-related success determinants may be made. Thus, firms exposed to similar isomorphic pressures begin to use similar resources, manage them in similar ways, and thereby creating a homogeneous IT landscape in one industry. Hence, the diversity from using resources as promoted in the resource-based view may diminish.

Finally, this research also contributes to an improved understanding of the IS lifecycle, in particular, of the role that motives play in the IS lifecycle. Prior research demonstrated that legitimacy-based motives affect the starting point of the lifecycle [IS intention to adopt] [111; 116], but they also affect later stages of the lifecycle [IS usage phase] [73]. In showing that motives also affect the middle (i.e., second) stage of the lifecycle – IS adoption and the success of this stage – this research study bridges the gap between the two separate streams of research. Consequently, this research provides the missing link and suggests that legitimacy-based motives affect the entire IS lifecycle; from the intention to adopt an IS, to IS adoption, and assimilation into the firm.

6.3 Implications for Practice

This research has several implications for practice. First, firms with IS adoption projects that are driven by institutional pressures may experiences issues regarding resource availability. The resource shortage may

be a result of an unplanned, and as such a sudden, decision to undertake an IS adoption project based on one of the three pressures for which no budget was planned or secured. In these cases, firms are encouraged to use existing resources as efficiently as possible to be able to manage and potentially decrease resource consumption of legitimacy-driven IS adoption projects. For example, firms that experience time shortages can use formal project management techniques to control the progress of the project and avoid project delays [94].

In addition, firms may attempt to negotiate deadlines with institutions that exert pressure [87]. For example, if a powerful supplier or customer requires a firm to adopt a particular IS, the firm can attempt to re-negotiate the implementation schedule of the system. If coercive pressure is exerted by government agencies, negotiations are often difficult, but nevertheless, examples of firms that successfully re-negotiated legal regulations do exist. For example, the Australian government/ Department for Climate Change, proposed in 2007 a carbon emissions trading scheme (ETS). Compliance with the ETS required firms to adopt an IS that allows tracking carbon dioxide emissions [63]. Due to the 2008/2009 economic crises, many firms were concerned that they might not have sufficient resources (i.e., budgets) for the implementation of the ETS, including necessary IS adoptions. After massive protests from representatives of various industries, the Australian parliament voted against the ETS in 2009, and postponed the starting date to July 2012.

Second, no matter which motive or motives drive an IS adoption, it is beneficial to clearly identify the motives. The identification of motives enables firms to become aware of potential positive effects that these motives might have, even if these effects may not be obvious at first glance. For example, our finding that coercive pressure has a positive effect on adoption success may surprise practitioners. Nevertheless, this effect can be explained by the increased awareness and attention given to the project within the firm. The strategic direction of nothing 'should go wrong' with the IS adoption allows for centering all efforts on the project as otherwise serious consequences (sanctions, penalties) may follow. The identification of motives also helps firms to conduct post implementation reviews, which are instruments that firms use to

analyze why an IS adoption project was initiated and what the outcome was [51]. Thus, this research may guide firms in their analysis and allow for revealing strengths and weaknesses of previous IS adoption projects so that the success of future IS adoption projects can be increased.

6.4 Limitations and Future Research

Although we are convinced that we have developed sound hypotheses and have applied an adequate approach to test them, we still acknowledge possible limitations of this research. First, results were created with self-reported data. Hence, it is possible that the responses were affected by the respondents' ideas of social norms, i.e., respondents may have provided answers that they consider socially acceptable [10]. To mitigate risks that stem from self-reported data, we repeatedly ensured the respondents that all responses would remain anonymous.

A second limitation may arise from the fact that all respondents were from Australian firms. As a result, a cultural bias may have been introduced. However, extensive research on institutional effects on IS innovation (including adoption intention and assimilation) has demonstrated that the three institutional pressures and their impacts on firms are a global phenomenon [82]. Thus, we believe that our findings are not culturally biased. Furthermore, prior studies on IS adoption in Australia [50; 68] and outside Australia [73; 111] showed comparable results. Therefore, we believe that by using Australian data, our findings are not impacted.

Third, our research model is not saturated such that we did not hypothesize a relationship between coercive pressure and project team competence and between mimetic pressure and project management approach. We have omitted these two relationships because there is not theoretical support in the literature as detailed in [anonymous: *citation will be included at a later point in time*].

This study gives rise to many areas of future research of which four are detailed here. First, we suggest that this study is repeated in multi-national settings to show that results can be extended beyond Australia. A multi-national study could highlight different nuances of the motives in different cultural contexts. For example, coercive pressure might differ across countries because of differences in legal

frameworks and different means to enforce government regulations. Therefore, the level of compliance might be different, and hence, the effects of coercive pressure might also differ. Similarly, in other countries the professional or industry associations may be better in conveying the norms regarding team member selection which may produce a different result for the relationship between normative pressure and project team competence. A multi-national study could provide further insights into such differences.

Second, research has extensively studied the use of formative and reflective measurements [19; 31; 32; 37; 45; 92]. The constructs in our model have been modeled as reflective, and we call for using formative and reflective measures to understand the impact of institutional pressures on success determinants and in turn, on IS adoption success.

Third, future research can study further outcomes of institutional pressures in the context of IS adoption. So far, IS research has only used institutional theory as a lens for examining IS adoption intentions, usage of IS, and, in this paper, IS adoption success. The effective use of a newly implemented IS was not at the center stage of these studies. Nevertheless, it is effective use of an IS that provides value for a firm [15]. Thus, it would be interesting to know to what extent pressures from the institutional environment affect IS users and the ways how users interact with IS. Such a study would enhance our knowledge about the ability of a firm to create value from IS.

Finally, future research could include other motives behind IS adoption, for example, motives relating to the firm's ability to generate value from their IS adoption projects. Institutional theory focuses on motives that stem from a firm's institutional environment. Nevertheless, even though firms are affected by their environment, some motives for IS adoption are internal to a firm. For example, many IS adoption projects are driven by the goal to increase efficiency. Investigating institutional motives and non-institutional motives in one study could show the interplay between the two.

7 CONCLUSION

Across the globe, firms frequently adopt new information systems (IS), but prior research and experiences from practice show that these IS adoption projects often fail. This study examined the extent to which motives of a firm to adopt a new IS impact on the success of the project. Drawing on institutional theory, the impact of three pressures (i.e. coercive pressure, mimetic pressure, and normative pressure) on IS adoption success mediated by resource-related success determinates (i.e. project management approach and project team competence) was empirically tested. Results showed that coercive and normative pressure positively impact on the project management approach whereas mimetic pressure positively impacts on team competence. In contrast, normative pressure did not have a significant effect on team competence. Both, the project management approach and competence impact positively on IS adoption success. This research contributes to the IS literature as it is one of the first attempts to link legitimacy-based motives with IS adoption success. It contributes to practice by providing decision makers with insights into the outcomes of IS adoption projects depending on the motives for initiating it.

8 APPENDIX: QUESTIONNAIRE

Coercive pressure (1 = strongly disagree; 7= strongly agree)

Coercive pressure from government

With regard to the adopted system:

1. The government requires my firm to use the system
2. Using the system is necessary for legal compliance
3. Regulatory requirements impose penalties for not using the system

Coercive pressure from suppliers

With regard to suppliers that have adopted the same, or a similar system…

1. My firm's well-being depends on them
2. My firm cannot easily switch away from them
3. My firm must maintain good relationships with them
4. They are the core suppliers in the industry

Coercive pressure from customers

With regard to customers that have adopted the same, or a similar system…

1. My firm's well-being depends on their purchases
2. My firm must maintain good relationships with them
3. They are the largest customers in the industry

Mimetic pressure

With regard to the adopted system: (1 = extremely low; 7 = extremely high)

1. The proportion of my firm's competitors that use similar systems is

With regard to the adopted system: (1 = strongly disagree; 7= strongly agree)

2. My firm's competitors that have adopted the system, or similar systems, are benefiting greatly
3. My firm's competitors that have adopted the system, or similar systems, are favorably perceived by others in the same industry
4. My firm's competitors that have adopted the system, or similar systems, are favorably perceived by their suppliers
5. My firm's competitors that have adopted the system, or similar systems, are favorably perceived by their customers

Normative pressure (1 = extremely low; 7 = extremely high)

With regard to the adopted system

1. The proportion of my firm's customers that use similar systems is
2. The proportion of my firm's suppliers that use similar systems is
3. The extent to which my firm's decision to use the system was affected by promotions by the government is
4. The extent to which my firm's decision to use the system was affected by promotions by industry, trade, or professional bodies is

Project team competence (1 = strongly disagree; 7= strongly agree)

With regard to the project team:

1. The team had the right technical skills
2. The team had sufficient IT management skills
3. The team had adequate project management skills
4. The team knew enough IT-knowledgeable people that could be contacted when required
5. The team had sufficient access to secondary resources (e.g. manuals, IT books, IT journals)

Project management approach (1 = strongly disagree; 7= strongly agree)

With regard to the IT project:

1. A formal budget plan was developed for the project
2. A formal project staff plan was developed
3. A formal resource plan was developed

IS adoption success (1 = extremely low; 7 = extremely high)

With regard to the IT project:

1. Adherence to the original project schedule was
2. Adherence to the original budget was
3. Adherence to the original technical specifications was

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