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RESEARCH ARTICLE

Mentoring adoption across the information systems project management process: Perceptions of IS project managers

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Abstract

To-date, there appears to be a dearth of information systems (IS) project management mentoring research relating to mentoring practices across the IS project management process. This study contributes to our understanding of the nature of mentoring practices in IS projects. Practicing IS project managers in multinational companies were asked about their mentoring experiences. Findings were based on data collected via a web-based descriptive survey. Four key observations were noted. Mentoring practice adoption was perceived as positive. Practicing IS project managers were cognizant of the benefits that can accrue from mentoring adoption. The drive for project success was a key motivation. Adoption was more expedient and forthcoming in an informal relationship situation. Overall, mentoring was perceived to enhance IS project management practice. The paper concludes by providing some directions for future research.

1. Introduction

The use of mentoring in organizations to support individuals' professional development is not uncommon. The value of mentoring has long been emphasized in the workplace (Griffiths et al., 2018; Maheshwari et al., 2023; Swap et al., 2001). The pervasiveness of mentoring adoption has been reported in many disciplines, including management, academia, counselling, social work, sociology, and medicine and health care (Swap et al., 2001; Jakubik et al., 2017; Lleó et al., 2018; Mullen & Klimaitis, 2021).

Equally, mentoring plays an important role in IS project management practices. For instance, the adoption of mentoring in project management practices is exemplified in the New York State Government Office of Information Technology Services' Project Management Guidebook (New York State IT Services, Feb 22 2024) and in the advocacy of the Project Management Institute (www.pmi.org). These two organizations encourage the practice of project management mentoring through purposeful adoption. Mentoring relationships provide a platform to utilize limited resources in a productive manner. They facilitate the up-skilling of project managers and team members through experiential-based learning (Gustafson & Darragh, 2023).

Despite the value and pervasiveness of mentoring, there appears to be a paucity of research on mentoring practices across the IS project management process. This paper presents the results of a descriptive survey which assessed the landscape of mentoring practice adoption. In the context of this study, mentoring practice adoption refers to the nature and characteristics of mentoring adoption as experienced and perceived by practicing IS project managers across the IS project management process.

This study aims to contribute to a better understanding of mentoring by way of providing an assessment of its practices informed by the experiences and perceptions of practicing IS project managers in multinational companies. It focuses on the 'whats' and 'whys' of mentoring adoption across the IS project management process. Broadly, the 'whats' relate to the general attitude/outlook of the survey participants towards mentoring adoption. This includes their attitudes towards mentoring practice, their understanding of mentoring and adoption characteristics, perceived obstacles to adoption, and lastly the advice of IS project managers to intending adopters. In terms of the 'whys' of mentoring adoption – the reasons/rationale why IS project managers adopted mentoring, why IS project managers were motivated to adopt mentoring, and lastly the benefits that result from adoption.

Consequently, the two research questions guiding this study are - What are the perceptions of IS project managers towards the adoption of mentoring? Why are mentoring practices being adopted by IS project managers?

This study contributes to the extant literature by shedding some light on mentoring adoption in IS project management practice. The participating IS project managers perceive mentoring can enhance the practice of IS project management and that mentoring can be more expedient and forthcoming when conducted in an informal relationship. Mentoring enhances the translation of tacit knowledge into knowledge that is more explicit and definite. IS project management mentoring not only facilitates solutions to project problems at hand but also prepares IS project managers for future projects. Evidence of the professional development of the IS project managers in this study is clear; and better career development is an underlining consideration that motivates practicing IS project managers in the adoption of mentoring. In addition, based on the findings, this study recommends some future research opportunities.

The next section of this paper considers mentoring literature in the context of process improvements in the IS project management process. It is followed by a section describing the research method and participants. The empirical findings of this study are then presented in the form of a report on mentoring practices and this is followed by a discussion of the results. The paper concludes by highlighting possible future research on the topic.

2. Related research

Competencies of project managers are considered a key success factor in the effective management of IS projects (Ochoa Pacheco et al., 2023). IS project managers play a critical role; of which, they are responsible for making critical project decisions. As such, prior experiences can improve project success. Awareness of potential pitfalls and learning from past mistakes can be very helpful.

This study is cognizant of prior research related to the roles of mentors and mentoring (as opposed to the adoption of mentoring practice) that have appeared in the IS literature. Examples include the review study by Stray et al. (2020) that noted the growth and importance of mentors (often called coaches) in the Agile community, and the study by Santos et al. (2007) that considered the role of mentoring in the project execution phase in Software Process Improvement (SPI).

Many other studies identified specific benefits of mentoring and the role of mentoring in IS projects, for example:

- Mentoring has played an integral part in the professional development of women and minorities in computing (Burrell & Nobles, 2018);

- Implicit (a form of informal) mentoring is useful in open-source development (Feng et al., 2022);

- Mentoring contributed to the onboarding of newcomers in agile project teams (Gregory et al., 2022);

- Mentoring is multi-faceted combining training, in project guidance and offline hand-holding (Ramaswamy, 2001).

Mentoring has also received significant attention in the broader management, leadership and organizational studies literature. In recent years, there have been several review articles on mentoring in organizations. For instance, in educational leadership (Mullen & Klimaitis, 2021); in workplace mentoring (Ivey & Dupré, 2022); and in employee development (Wahdiniawati & Sarinastiti, 2023). These reviews highlighted mentoring articles in many domains including school / higher education, medicine / nursing, sports management / coaching, and also in vulnerable and minority communities. Mentoring is also well documented in the disciplines of psychology, counselling, social work and sociology (Maker Castro & Cohen, 2021; Keller et al. 2020).

Despite the widespread practice of mentoring, empirical studies of mentoring in various contexts remain low to date. The study by Amanda and Akpana (2023) on mentoring and employee productivity in organizations was motivated by a dearth of documented empirical studies on how mentoring in terms of career support, psychological support, and information sharing influence employees' productivity. In another study, the author expressed little attention has been paid to understanding the lived experiences of law advocates regarding mentoring, in particular, what it meant to both mentors and mentees, how mentoring was practiced and the associated challenges (Wilson, 2022). There is also a limited understanding of the critical mentoring (relational) processes that generate lasting benefits for young mentees which Goldner and Ben-Eliyahu attempted to address in their recent study (Goldner & Ben-Eliyahu, 2021).

Overall, mentoring-related research adds up to less than the sum of its parts. To this end, studies in relevant contextual domains have progressed on an incremental basis while core concepts and theory have attracted relatively little attention.

In the IS project management area and in spite of the evidence that mentoring practice adoption and associated project success improvement can benefit both IS project managers and the IS professionals (as alluded to earlier in this section), there is relative paucity of empirical research into the mentoring adoption and practice in support of the IS project management process. As observed in the broader disciplines mentioned above, mentoring can be expected to also contribute prominently in IS project management. This study therefore seeks to address the gap in our understanding of this context through a study of IS project managers.

3. The Research Method

As the aim of this research is to describe and better understand the nature and characteristics of mentoring across the IS project management process, a descriptive survey is adopted. This method is employed given the desire to further understand the experiences and perceptions of practicing IS project managers who are mentees learning from, and being guided by, a (usually) more experienced individual or group of individuals. The intent is to derive maximum meaning from the experiences and perceptions of the practicing IS project managers regarding the adoption of mentoring across the IS project management process. It enables us to identify key attributes, such as the attitudes of IS project managers to mentoring practice and their knowledge and understanding of mentoring as a practice, as well as the characteristics of mentoring adoption. It also supports our investigation of the experiences and perceptions of practicing IS project managers with regard to the obstacles to adoption, and their advice to intending adopters.

The descriptive survey research method is generally considered appropriate for gathering broad-based practice information such as sought in this study. It has been used previously in IS and mentoring studies. For example, a requirements engineering study used a web-based descriptive survey research approach on the common practices, approaches, and techniques of the software development industry (Neill & Laplante, 2003) and a descriptive survey was employed in a study of mentoring for change in teacher technology education (Ward et al., 2002).

As the study is descriptive in nature (i.e. neither theory building nor theory testing), the survey questions do not follow any conceptual framework/model; but rather are framed along the broad dimensions of: rationale for adoption of mentoring; characteristics of adoption of mentoring; perceived benefits; barriers/obstacles; and recommendations for intending adopters. These were drawn from the literature (both academic and practitioner).

Appendix A presents the survey instrument designed to determine broad adoption patterns and characteristics. It contains mainly closed questions but for some questions, some free text input is permitted. This free text option in some questions allows participants to further expand on the answers to selected survey questions or to provide a response where none of the options outlined fits. The closed questions were simple branching type question with a 'yes' or 'no' answer; multiple-choice type question with one or many mandatory selection(s); and multiple-choice type question with an option for the participants to insert personalized inputs and complete Likert multi-point scales where they are asked to select a preferred option on a scale of 'Strongly Agree', 'Agree', 'Neither', 'Disagree' or 'Strongly Disagree'.

To fine-tune the survey instrument, pre-testing was carried out with five IS project managers. Feedback and suggestions were solicited during pre-test to ensure clarity of the questionnaire and survey instructions. The responses from the pre-test were excluded from the final results. In anticipation of the busy schedules of the participating IS project managers, the survey was designed to take approximately 15-20 minutes to complete.

The research participants in this study (including the pre-test) were selected from 87 multinational corporations (MNCs) that were based in Malaysia's Multimedia Super Corridor (MSC). MSC Malaysia is a special economic zone and a high-technology business district spanning the federal territories of Kuala Lumpur and Putrajaya, central-southern Selangor and parts of western Negeri Sembilan. We anticipate being able to secure a reasonable number of responses to our email survey invite from MNCs located in the MSC given businesses in the MSC are in the high-technology sector. Twenty-six of the 87 MNCs participated in the survey. The listed industry categories of these MNCs and the numbers of participants in each category are shown in Figure 1.

Fig. 1. Industry categories of participating MNCs

(with number of participating IS project managers indicated)

A total of 46 IS project management practitioners completed the survey. The profile of the research participants can be found in Appendix B. At the time of the survey, 27 of the participants described themselves as practicing IS project managers, i.e. they took the lead role in project management. Fifteen described themselves as having taken the lead role in project management in previous projects. Nine participants did not describe themselves as having taken (or currently taking) the lead role in project management and/or indicated no prior or current experience of mentoring adoption. As such, the nine participants did not complete the section of the survey designed to gather IS project managers' experiences of mentoring adoption (i.e. questions 20, 21, 23, 24, 25 and 26). This explains why responses to the survey questions were aggregated as being from either 46 or 37 participants.

As the methodology employed is a descriptive survey, the responses were analyzed and presented in aggregated form; wherein data for both the open and closed questions are categorized and aggregated into charts such as histograms and bar charts. In other words, simple frequency counts of responses are employed. These representations were used together with excerpts from participants' responses to open-ended questions to examine and analyze the landscape of mentoring adoption in IS projects.

4. Findings: Characteristics of mentoring practice in IS project management

In this section, the landscape of mentoring adoption across the IS project management process is reported. It is essentially an assessment of the state of mentoring practice i.e. the 'whats' and 'whys' of mentoring adoption; beginning with the 'whats' and then progressing to the 'whys'.

4.1. Mentoring practice adoption – the 'Whats'

Overall, the results of the survey analysis highlighted a generally positive attitude towards mentoring. The general perception was that mentoring was an effective means to develop one's potential. This overall positive attitude was affirmed in the recommendations the participating IS project managers offered to those intending to adopt mentoring.

4.1.1 Attitude and mentoring knowledge of IS project managers

Tabulation of the responses in Figure 2 shows that no negativity was evident in the participants' responses to the question 'What is your general attitude towards mentoring?', where 9 out of the 46 participants had a neutral stance towards mentoring. The remaining 37 participants (about 80%) ranked themselves as having a positive (21 out of 46) or very positive (16 out of 46) attitude towards mentoring. Generally, the participants appeared positive towards mentoring; and this may also be said of their attitude towards the adoption of mentoring in a project environment.
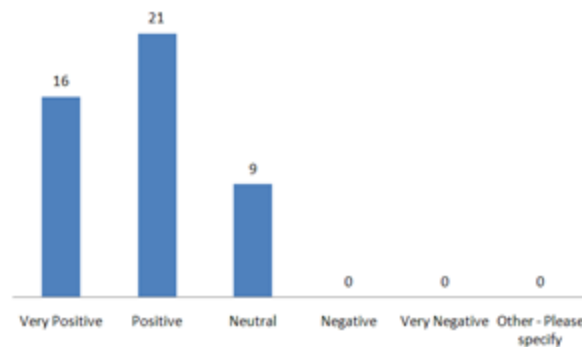
Fig. 2. General attitudes towards mentoring

The number of participating IS project managers that considered themselves as having poor knowledge of the subject of mentoring is small (4 out of the 46 participants). Similarly, and as shown in Figure 3, the number of participating IS project managers that considered themselves as having excellent knowledge of the subject of mentoring is also small (3 out of 46). Just a single participant indicated that had no knowledge of the subject of mentoring. Overall, the majority of the participating IS project managers (38 out of 46 i.e. more than 80%) rated themselves as having reasonable knowledge on the subject of mentoring. The breakdown of these 38 IS project managers is 15 and 23, and respectively each indicates very good and moderate knowledge. Overall, it can be said that most of the participating IS project managers considered themselves to be knowledgeable about mentoring.
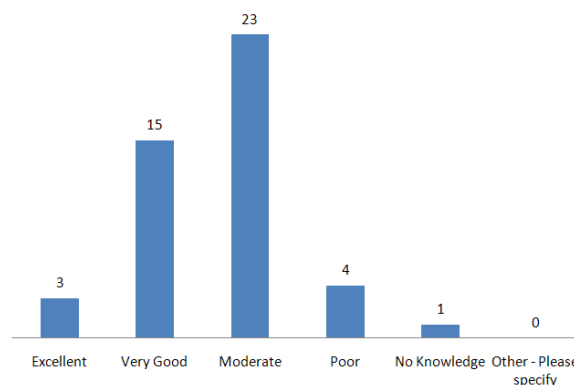

Fig. 3. Knowledge of mentoring - IS project manager self-rating

Figure 4 shows the breakdown of the selection votes received for each of the sources of information. In response to a question on the source of information regarding their mentoring knowledge (which allowed for selection of multiple sources), 'University or institution of higher learning' attracted only five votes of the total of 131 votes received. 'Personal experience' attracted the highest number of votes (40 out of 131). This is followed by 'Observing others in my work unit' (25 out of 131), 'Discussion with peers' (24 out of 131) and 'Reading about it' (23 out of 131). These results emphasized the importance of self-exploration, practice-based learning and anecdotal knowledge in the participants' knowledge of mentoring, which together (the top four) accounted for over 85% of the responses. This may be suggestive of high self-interest and also alludes to a high sense of awareness towards the positives of mentoring relationships. In contrast, few acquired mentoring knowledge through the 'Internet' (12 votes) and very few participants acquired mentoring knowledge (5 votes) during their university education.
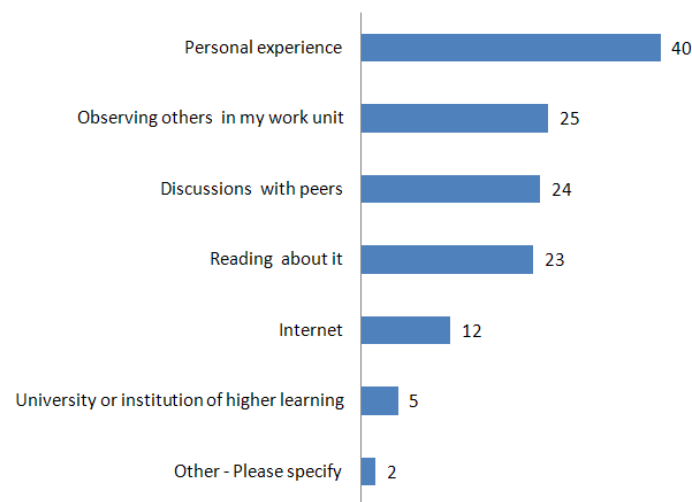

Fig. 4. Mentoring knowledge - sources of information

Two free-format responses were received in response to this survey question. They were 'in-house training courses and materials' and 'thought it is a good idea'. The first response of 'in-house training' indicates a likelihood that organizations recognized the importance and relevance of mentoring to their IS project managers. The second response may not provide a clear answer to the question but nevertheless it was a positive inclination towards mentoring adoption rather than a negative one.

4.1.2 IS project managers' general perception of mentoring

Responses to a question seeking to reveal project managers' views on the role of mentoring across the IS project management process were dominated by two perceptions. The first was that mentoring was an effective method for the general improvement of IS project managers; and the second was that mentoring is better adopted using a spontaneous approach. These options each received 32 and 24 votes respectively out of the 71 casted (note that selection of multiple options was permitted). In contrast, the remaining options selected are illustrated in Figure 5 and they each received 5 or fewer votes. The implications of these additional responses were that mentoring is not as effective when one's immediate superior is involved and the yardstick of mentoring may not necessarily be based on whether IS project managers are of 'high potential' or otherwise.

Three free-format responses to this open-ended survey question were received. They were:

- ■ 'Mentoring cramps the style of the IS project manager',
- ■ 'Develops not only hard skills but more importantly the soft skills as well', and
- ■ 'Mentoring is for the successful completion of a complicated, high-end project'.

The first free-format response seems negative, as it appears that mentoring can possibly constrain an individual's style and approaches taken in the management of projects. The second response appears to incline towards individual self-improvement; whereas the third response suggests that mentoring can possibly contribute towards improving IS project success.
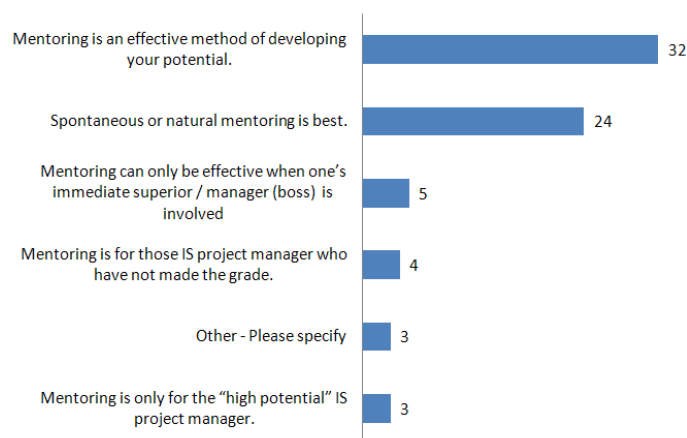
Fig. 5. General perceptions of mentoring

4.1.3 Adoption characteristics

Thirteen adoption characteristics drawn from the literature were put to survey participants who were asked to complete a Likert scale from 'Strongly Disagree' to 'Strongly Agree' indicating the extent of their agreement regarding each characteristic. Figure 6 shows the participating IS project managers' responses to these mentoring characteristics categorized by Disagree (includes both Disagree and Strongly Disagree), Neither and Agree (includes both Agree and Strongly Agree).

The most agreed-with mentoring characteristic was that of 'a trusted and confidence adoption relationship' (35 out of 37 participants, or around 94%); of whom 7 were that of 'Strongly Agree'. Broadly, this reflected the importance of a trusted mentor-mentee relationship.

The next three most agreed-with characteristics were:

- ■ An informal and on an as-required basis;
- ■ A learning-to-do (i.e. apprenticeship) approach;
- ■ Driven by business domain knowledge.

These characteristics were agreed with by a minimum of 31 (out of 37) participants. The mentor and mentee being the same gender did not seem to be significant in the adoption process – this characteristic was agreed with by only one (out of 37) participant. In fact, 22 (out of 37) participants disagreed with this option, with 14 (out of 37) indicating neutrality.
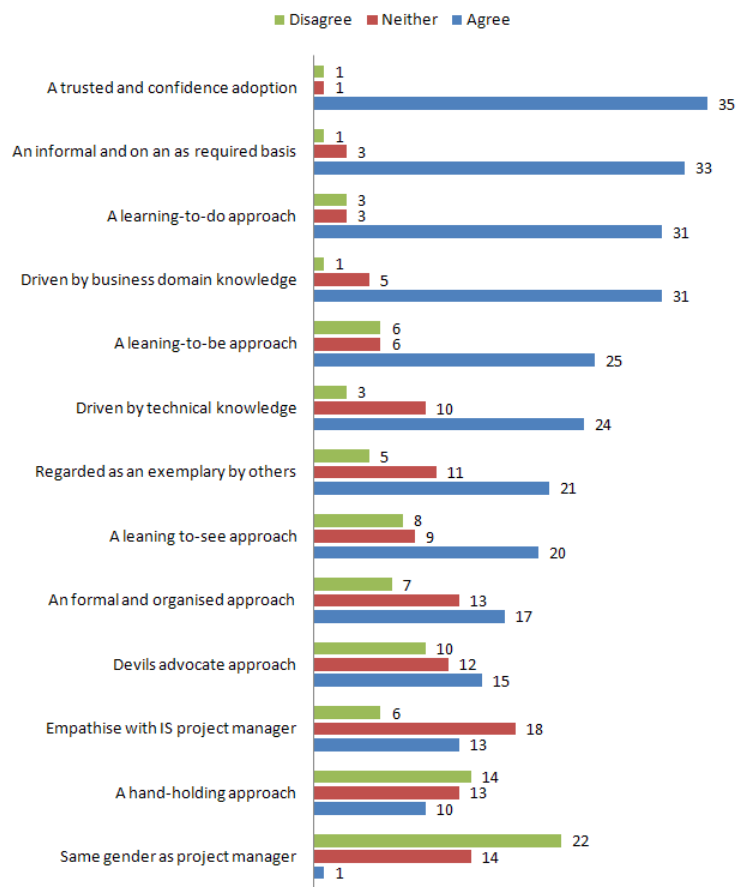
Fig. 6. Mentoring adoption characteristics

Note: The figures for 'Agree' above are the sum of the 'Agree' and 'Strongly Agree' survey responses; the figures for 'Disagree' above are the sum of the 'Disagree' and 'Strongly Disagree' survey responses. This applies to the discussion of all Likert scale-type questions in this paper.

The remaining eight adoption characteristics received mixed responses; they are listed below in the order of level of agreement:

- A learning-to-be approach;
- Driven by technical knowledge;
- Regarded as exemplary;
- A learning to-see approach;
- A formal and organized approach;
- Devil's advocate approach;
- Empathize with IS project manager;
- A hand-holding approach.

Overall, the four most agreed-with mentoring adoption characteristics reflected learning by observation of more experienced individuals and the importance of technical knowledge. In contrast, the four least agreed-with mentoring adoption characteristics reflected that of a formal and organized approach with elements of project mentors playing the role of a devil's advocate requiring empathy or a handholding approach.

4.1.4 Resistance to adoption

When the participants were asked to rate the barriers they faced in mentoring adoption on the Likert scale, the top most agreed-with options were non-availability of experienced project managers (as mentors) and lack of time. These two barriers were agreed with by 28 and 27 (out of 37) participants, respectively. Seven of the 28 responded with 'Strongly Agree' to the lack of availability of suitably experienced project managers being a barrier, while six (of the 27) responded similarly to lack of time being a barrier.

Figure 7 ranks the barriers to mentoring adoption as perceived by the participating IS project managers from most agreed-with to least agreed-with.
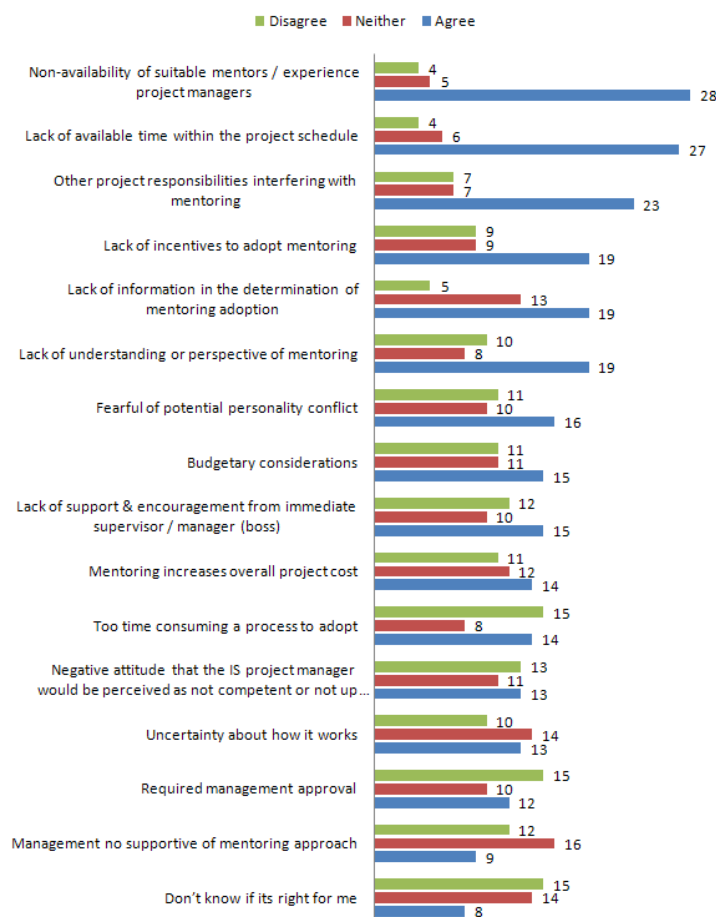

Fig. 7. Barriers to mentoring adoption

The next four barriers listed in Figure 7 were agreed with by between 19 and 23 (out of 37 participants) respectively. They are:

- Other project responsibilities interfering with mentoring;
- Lack of incentives to adopt mentoring;
- Lack of information in the determination of mentoring adoption;
- Lack of understanding or perspective of mentoring.

The next eight barriers listed in Figure 7 were agreed with by between 12 and 16 participants. Amongst them are:

- Fearful of potential personality conflict;
- Budgetary considerations;
- Lack of support & encouragement from immediate supervisor/manager (boss) ;
- Mentoring increases overall project cost.

The two least agreed with barriers were 'Management not supportive of mentoring approach' and 'Don't know if it's right for me'. Nine and eight (out of 37) participants agreed with these respectively. These results reinforce the respondents' personally favourable perception of mentoring as well as general organisational support for the practice.

4.1.5 Advice to those intending to adopt mentoring

Participants were asked to indicate on a Likert scale their agreement with various recommendations to IS project managers who were contemplating the adoption of mentoring as a supporting mechanism (see Figure 8). Overall, the results showed that participants were inclined to encourage adoption. The recommendation 'Mentoring to be encouraged and be adopted on a need basis' was agreed with by 34 out of the 37 participants and 9 of these responded with 'Strongly Agree'. In contrast, the recommendation 'Mentoring must not be adopted at all' was agreed with by only two participants, 1 of whom responded with 'Strongly Agree'. The next three most agreed-with recommendations further underscored the positive sentiment towards encouraging adoption, with a focus on soliciting support from more experienced in-house individuals on an as-needed basis and adopting mentoring for selected IS project management processes instead of the entire process.

The next five choices of recommendations selected by participants were a 'mixed bag', but again the inclination seemed to be more towards adoption than not.

When the practicing IS project managers were asked whether they would recommend having a project mentor to their colleagues/peers, almost 12% said they would not. The two reasons selected were that 'It takes too much project time' and 'Management is not supportive'. In addition, two participants provided their own responses in the free-format space provided:

- '*Every individual should be able to learn from their mistakes. Having a mentor all the time would be like spoon-feeding.*'
- '*Mentoring slow down the project. They should have sufficient knowledge in own area.*'
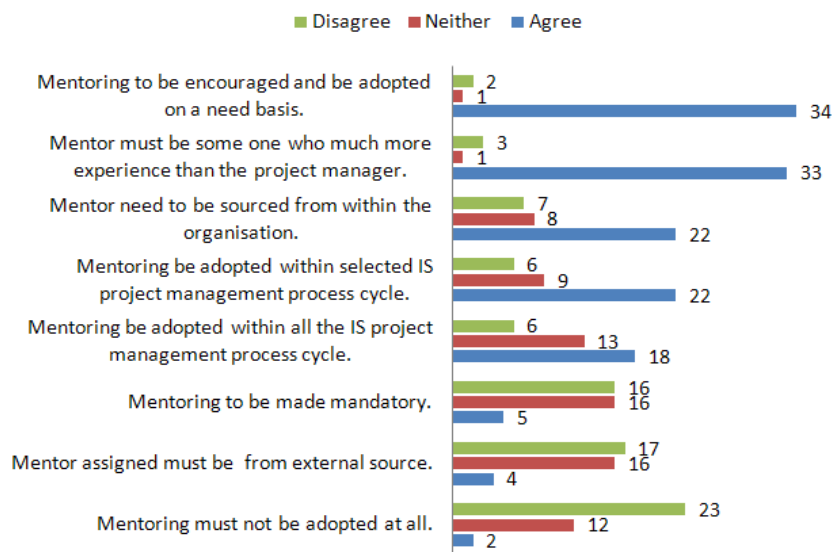
Fig. 8 Advice to those intending to adopt mentoring

4.2. Mentoring practice adoption – the 'Whys'

Overall, the survey data indicated the key motivations for mentoring adoption as project success, connectivity to a network of experienced individuals, camaraderie, and the accrued benefits of mentoring. Amongst the benefits, participants identified accessibility to expertise and knowledge gain. The context of the mentoring relationship is that of a free and open exchange of knowledge and experience driven by the guidance, support and encouragement of more experienced individuals over the duration of the IS project.

The next two subsections present findings of the survey in relation to the second research question. The first subsection reports the reasons for the adoption of mentoring, whereas the second subsection reports on the benefits delivered through mentoring adoption in IS projects, both as primarily informed by practicing IS project managers in response to the survey questions.

4.2.1 Rationale for mentoring adoption

The 15 predetermined rationales for mentoring adoption have been ranked in the order of most agreed with to least agreed with in Figure 9. All the participating IS project managers agreed that the availability of a free and open exchange of knowledge and experience was a reason for adoption. Only two participants agreed that the fulfilment of statutory requirements contributed to adoption with 19 others disagreeing and a further 16 taking a neutral stance. Similar results were obtained regarding the rationale 'It is part of management & company policy': six agreed, 11 disagreed and 20 were neutral. These findings suggest that mentoring practice adoption in IS projects is rarely due to a need to comply with internal company policies or to fulfil statutory requirements.

The rationales 'Encouraged by my immediate superior/manager (boss) to do so' and 'Recommended by my peer & colleague' received a mixed response from the participants although overall the responses to these rationales were more positive than negative. In contrast, the number of those who agreed with the rationale 'Helps my career' was significantly larger than the number of those who disagreed. This trend is true of the remaining nine adoption rationales. Each attracted the agreement of between 30 to 36 participants. Two common denominators of these supported rationales are desire for personal self-improvement and for project success.
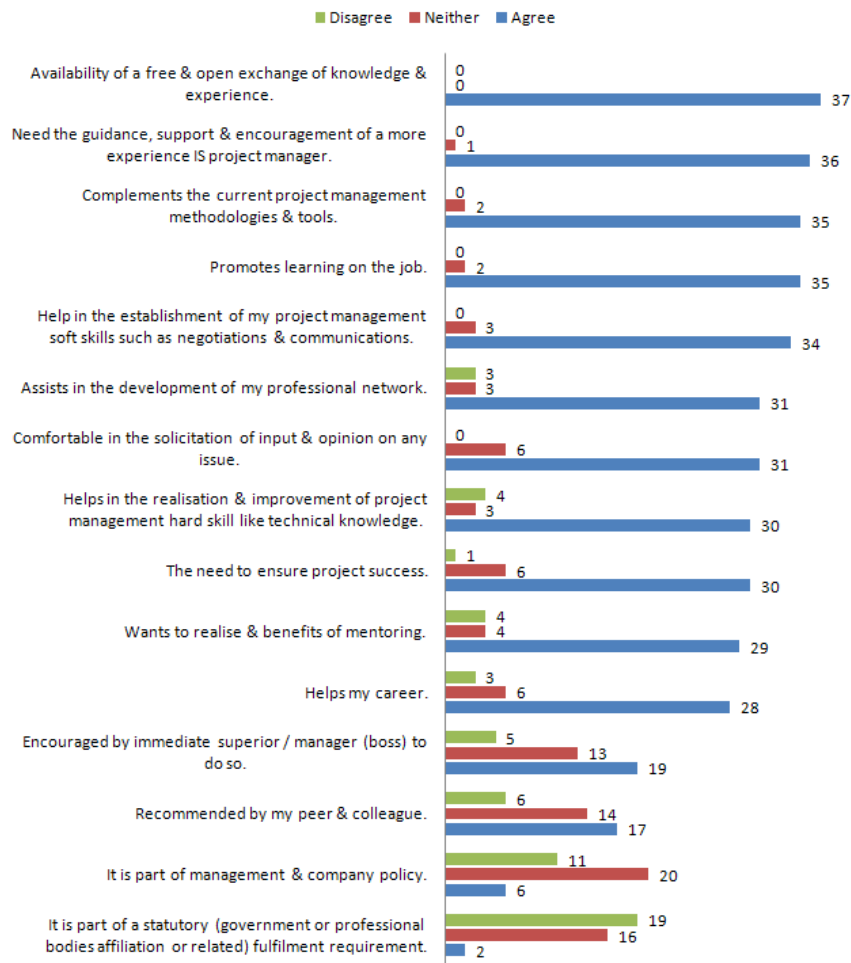
Fig. 9. Rationale of mentoring adoption

4.2.2 Benefits of mentoring

When the participants were asked about the benefits that mentoring adoption delivers to IS projects, the two most agreed with options were access to expertise and knowledge gain (35 of 37 participants, in both cases). Of these, 10 responded with 'Strongly Agree' with respect to access to expertise and 11 responded the same way to knowledge gain. The benefits are ranked in order of most agreed with to least agreed-with in Figure 10.

Seven benefits were agreed with by between 31 and 34 (out of 37) participants:

- Enable and provide feedback, reflection & introspection of the project;
- Better anticipation of project risk;
- Better resolution of project issues;
- Contribute to project knowledge base of the organization;
- Increase my confidence as a project manager;
- Increase probability of project success;
- Development of project interpersonal & communication skills.

Fig. 10. Benefits of mentoring adoption

Five benefits were agreed with by between 26 and 29 (out of 37) participants each:

- An expanded knowledge of career path & options;

- Avoid learning by the trial & error method;

- Better management of project resources;

- Improved overall risk of the project management;

- Better management of project stakeholders & executive sponsors.

Four benefits were agreed with by between 19 and 22 (out of 37) participants each:

- Better cost containment/control;

- Better control of project schedule/deadline;

- Enhanced trust of senior management due to the presence of a more experienced mentor;

- Increase & boost honour, recognition and self-esteem.

The last two benefits in the above list were the most disagreed with – by 5 and 7 (out of 37) participants respectively.

Overall, it is clear that the participants' feedback from the survey was very positive and there seemed to be a great awareness of the benefits of mentoring adoption.

5. Discussion

This assessment of the nature of mentoring practice adoption across the IS project management process covers two areas in the discussion: the 'whats' and 'whys' of mentoring adoption as perceived by IS project managers. Broadly, the 'whats' relate to the general attitude/outlook of the survey participants towards mentoring adoption. This includes their attitudes towards mentoring practice, their understanding of mentoring and adoption characteristics, perceived obstacles to adoption, and lastly the advice of IS project managers to intending adopters. The second area of discussion is the 'whys' of mentoring adoption – the reasons/rationales why IS project managers adopted mentoring, why IS project managers were motivated to adopt mentoring, and lastly the benefits that result from adoption.

Overall, participants conveyed positive attitudes towards the adoption of mentoring practice across the IS project management process; no negative attitudes were reported but some respondents were neutral. This broadly positive outlook resonates with mentoring adoption across other disciplines such as academia, counselling, management, social work and legal/medical fraternity (Keller et al., 2020; Maker Castro & Cohen, 2021; Ivey & Dupré, 2022; Wahdiniawati & Sarinastiti, 2023; Amanda & Akpana, 2023). The results of this study indicated that the responding IS project managers considered themselves to be generally knowledgeable about mentoring, well aware of the benefits accrued to mentoring, and also well read in areas related to mentoring. In addition, the sources of mentoring knowledge cited by IS project managers reflected a sense of personal interest; with the most cited sources for mentoring knowledge were their own personal experiences, reading and exploring, and observations and discussions with peers. This was consistent with Hairon et al.'s (2020) observation that effective mentoring generally is supported by a good knowledge of mentoring.

The overall positive perception of IS project managers towards the adoption of mentoring indicates their belief that it is an effective method of developing one's potential. In addition, mentoring was considered best carried out in a spontaneous manner. This finding is consistent with the broad assertion of numerous studies that have found that mentoring is an appropriate and efficacious mechanism for the betterment of the mentee (Taylor & Woelfer, 2009; Mullen & Klimaitis, 2021).

Two of the key characteristics of mentoring adoption perceived by the participants were trusted and confidential relationships established on an informal and as-required basis; and being able to learn from more experienced individuals. These characteristics resonate with the many definitions of the mentoring relationship (Cowen, 2024; Janssen et al., 2016; Crabwell-Ward et al., 2004). Regarding the occurrences of learning, participants perceived the learning-to-do, learning–to-be and learning-to-see approaches as being effective.

With respect to other characteristics of mentoring adoption across the IS project management process, three of the most noteworthy are now considered. First, the mentoring relationship was found to be non-gender biased. This is consistent with the general indication of workplace mentoring that the mentor and mentee may not necessarily be of the same gender (Sosik & Godshalk, 2000). The second noteworthy characteristic was that the notion of mentors 'holding the hands' of

their mentees received a mixed response from participants. The need for handholding may be dependent on numerous factors such as the mentee's level of experience and the nature of the project. Overall, it seems consistent with the suggestion that there is a need to strike a balance (Parsloe & Leedham, 2016). Third, and finally, was the characteristic of mentors playing the role of devil's advocate, which also received a mixed response from respondents. A devil's advocate approach seems consistent with the broader concept of encouraging deeper reflection and introspection; it facilitates the understanding and development of the IS project manager (Conway, 1995).

The main barriers identified to the adoption of mentoring were the non-availability of suitable project mentors and lack of available time within the project schedule. Time and availability factors are not uncommon barriers. Other obstacles perceived by IS project managers were - being kept busy with project responsibilities; lack of incentives; being fearful of potential personal conflict; and budgetary considerations. These perceived obstacles are common across the discipline of medicine and in academia (Lane & Clutterbuck, 2004; Young & Perrewé, 2000).

The broadly positive outlook on mentoring discussed was also evident in the advice participants had for their peers who were intending to adopt mentoring. Such positive recommendations have been noted in other fields (Lleó et al., 2018; Porterhouse et al., 2024).

We now shift our attention to the 'whys' of mentoring adoption: the rationale, motivation and benefits perceived by IS project managers. When project managers were asked in the survey to state their agreement or disagreement with the reasons as to why mentoring is adopted, overall, they indicated a strong awareness of the benefits that can accrue from mentoring, such as: learning on the job; refining aspects of soft skills; assistance in project problem-solving; knowledge acquisition; encouragement/support and conferring/consulting. This is consistent with the broad whys of mentoring mentioned in the literature earlier (Swap et al., 2001; Griffiths et al., 2018; Burrell & Nobles, 2018; Ngereja & Hussein, 2021; Feng et al. 2022; Gregory et al., 2022; Maheshwari et al., 2023).

The availability of a free and open exchange of knowledge and experience was a reason unanimously agreed with by the responding IS project managers. In addition, mentoring was not generally adopted for reasons of compliance – IS project managers adopted it of their own volition. While monetary and economic considerations were general motivating factors, human capital elements; self-esteem and self-actualization were also powerful motivations for mentoring adoption for the participants.

As a result of the above-noted ambience of trust and confidentiality in the mentee/mentor dyad relationship, the creation of a stronger personal network is likely. This would provide a basis for the enhancement of social capital. New knowledge may be generated by mentors and the mentees solving project problems in a collaborative effort (Henriques & Curado, 2009).

This study noted the participants' high degree of awareness of the benefits accrued from mentoring adoption and a mentoring relationship. This was amongst the many benefits experienced by IS project managers in this study. Access to a wealth of expertise and experience in an environment that offers active feedback and introspection; and better anticipation of project risks and better resolutions of project problems were cited as the main benefits by participants. These are related to the benefit of capability and skill enhancement.

6. Conclusion and future research

Table 1 presents a summary of the key findings from this study. It represents the most agreed-with responses from the survey. In other words, these findings denote the more important aspects of mentoring adoption as perceived by the practicing IS project managers.

Table 1. Summary of key findings

Survey Themes	Description
Attitude Towards Mentoring Adoption	Generally positive attitude towards mentoring as an effective means to develop one's potential. Affirmed in the recommendations offered to those intending to adopt mentoring.
Knowledge of Mentoring / Sources of Information	Moderate to excellent knowledge of mentoring because of personal experience, observing others, discussion with peers, reading about mentoring and in-house training courses and materials.
Mentoring Adoption Characteristics	A trusted mentor-mentee relationship, an informal and as required approach, a learning-to-do (apprentice) approach, and driven by business domain knowledge.
Rationale for Mentoring Adoption	Availability of a free and open exchange of knowledge and experience, needing the guidance, support and encouragement of a more experienced IS project manager, and promotes learning on the job.
Benefits of Mentoring Adoption	Access to the wealth of professional expertise and experience of a project mentor and to gain new knowledge and new ideas from another perspective.
Barriers to Mentoring Adoption	Non-availability of suitably experience mentors, lack of time within the project schedule, and other project responsibilities interfering with mentoring.
General Perceptions of Mentoring	Mentoring is an effective method of developing one's potential; and mentoring is best carried out in a spontaneous manner.
Advice to Those Intending to Adopt Mentoring	Mentoring to be encouraged and adopted on a need basis, soliciting mentoring from more experienced in-house colleagues, adopting mentoring for selected IS project management processes instead of the entire cycle.

Mentoring practice adoption across the IS project management process was perceived by the participants as generally positive and rewarding. Their responses suggested that the mentoring relationship not only provided support through advice and guidance from more experienced individuals but also provided invaluable up-skilling opportunities. Significantly, practicing IS project managers appreciated the support and learning received in times of need; they found that what they learned could be put into practice. Additionally, this generally positive attitude towards mentoring may be a result of IS project managers' au courant attitude towards mentoring knowledge; the quest for mentoring knowledge appears to have its source in strong personal interest in mentoring.

The practicing IS project managers in this study were cognizant of the benefits that can accrue from mentoring practice adoption. The benefits of capabilities and skills enhancement for professional development were clear. The participants identified access to the wealth of expertise and experience of mentors and knowledge gain as amongst the top benefits. The generally positive attitude towards mentoring and the knowledge of benefits that accrue from mentoring practice adoption meant that the participants generally recommended mentoring to intending adopters without hesitation.

The key motivation to adopt mentoring across the IS project management process was the drive for project success. The advantages of connecting to a network of experienced individuals and the awareness of the benefits emanating from mentoring relationships were two other motivating factors. In addition, a sense of esprit de corps – which can deepen a relationship – also drives practicing IS project managers towards mentoring practice adoption. Better and improved career development seems to be the underlining consideration of these motivations. The practicing IS project managers identified the advantages of learning on the job, refinement of soft skills, project problem-solving, support, encouragement, and conferring/consulting.

Furthermore, the study's participants agree that mentoring practice adoption was more expedient and forthcoming in an informal relationship environment, which is characterized and sustained by active feedback, introspection and reflection. The relationship mentoring dyad relationship was perceived by IS project managers as one of trust and confidentiality where free and open exchange can occur. The connectedness of the mentoring dyad enhances and in turn increases the ability and inclination to learn.

Impediments to mentoring practice adoption identified by participants were the non-availability of suitable project managers as mentors and lack of time over the duration of a project. These impediments can prevent full realization of the benefits of mentoring adoption, which can in turn devalue efforts and compromise project success. Further to this, such impediments may diminish the state of expectation of IS project managers due to the generally high level of positive awareness.

The above conclusions suggest future research opportunities in IS project management mentoring vis-à-vis IS project success rates and the up-skilling of IS project managers. Future research could be conducted in the areas of cognitive skills enhancement for problem-solving, personal interaction skills improvement, the provision of knowledge bases of lessons learnt. A longitudinal study of the perspectives of project owners and project mentors in each of the areas identified above may also be useful. Further empirical research in these areas not only can contribute meaningfully towards IS project success but also help to corroborate that IS project management mentoring is an effective platform for the up-skilling and learning of novice IS project managers.

This study did not explicitly address factors related to gender and gender differences that could influence the results. On a broad basis, the mentoring adoption survey of this study seems to indicate a low gender preference by the participating IS project managers. There are however some inconsistencies in the literature about gender differences in mentoring; where gender and gender differences of the mentoring dyad are known to influence the expected outcome of a mentoring relationship (Sosik & Godshalk, 2001). To further understand the issues of gender, gender differences and gender preferences of the mentoring dyad, further studies should be conducted in these areas.

Finally, future research can be conducted around staff retention. This study did not set out to explore mentoring adoption and the development of a community and as such an attitude of esprit de corps which may reduce turnover. This could be harnessed towards improving retention of IS project managers.

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Appendix A. The survey questionnaire

This survey has two sections i.e. Section A and Section B.

When you have completed this survey, please click the 'Submit' button at the bottom of the page to send us your answers for processing.

Section A

1. Are you currently an IS Project Manager? Please select one. *

- ○ Yes
- ○ No

2. What is the nature of your current IS project? Please select any that applies. *

- ○ Business Applications Related Software System Project
- ○ Systems Related Software System Project
- ○ Computer Hardware Related Project
- ○ Networking Related Project
- ○ Communications Related Project
- ○ A Combination of any of the above-mentioned
- ○ Other - Please specify

[   ]

3. What phase of the IS project management process cycle are you currently at? Please select any that applies. *

- ○ Initiating
- ○ Planning
- ○ Executing
- ○ Monitoring and Controlling
- ○ Closing
- ○ Other

[   ]

4. Do you have a mentor currently? Please select one. *

- ○ Yes
- ○ No

5. Would you prefer a mentor assigned to your project? Please select one. *

- ○ Yes
- ○ No

6.Would you recommend to your peers or colleagues that they adopt the mentoring process in their project? Please select one. *

○ Yes

○ No

7.What would be the reasons that you would NOT recommend the adoption of mentoring to your peers or colleagues in their project? Please select any that applies. *

☐ An IS project mentor is not useful.

☐ It takes too much project time.

☐ Management is not supportive.

☐ Getting a mentor is detriment to their career

☐ Do not believe in mentoring.

☐ It would reflect negatively on them.

☐ Other - Please specify

[text box]

8. What would be the reason(s) that you would prefer a mentor assigned to your projects. Please select any that applies. *

☐ An IS project mentor would be helpful.

☐ Avoid the trial and error approach.

☐ Increase the probability of success.

☐ Enhance the trust of senior management.

☐ Want a better managed IS project.

☐ Want an expanded knowledge of career path and options.

☐ Be effective as a IS project manager.

☐ Other - Please specify

[text box]

9. What would be the reason(s) that you recommend the adoption of mentoring to your peers or colleagues? Please select any that applies. *

☐ An IS project mentor would be helpful.

☐ Avoid the trial and error approach.

☐ Increase the probability of success

☐ Enhance the trust of senior management.

☐ Want a better managed IS project.

☐ Want an expanded knowledge of career path and options.

☐ Be effective as a IS project manager.

☐ Other - Please specify

[text box]

10.Were you an IS project (leader) manager previously? *

○ Yes

○ No

11. What was the nature of your IS project previously? Please select any that applies. *

☐ Business Applications Related Software System Project

☐ Systems Related Software System Project

☐ Computer Hardware Related Project

☐ Networking Related Project

☐ Communications Related Project

☐ A Combination of any of the above-mentioned

☐ Other - Please specify

12. Did you have a mentor in your previous IS project? Please select one. *

○ Yes

○ No

13. Would you have preferred a mentor assigned? Please select one. *

○ Yes

○ No

14. Would you recommend to your peers or colleagues that they adopt the mentoring process in their project? Please select one. *

○ Yes

○ No

15. What would be the reasons that you would NOT recommend the adoption of mentoring to your peers or colleagues in their project? Please select any that applies. *

☐ An IS project mentor is not useful.

☐ It takes too much project time.

☐ Management is not supportive.

☐ Getting a mentor is detriment to their career

☐ Do not believe in mentoring.

☐ It would reflect negatively on them.

☐ Other - Please specify

16. What would be the reason(s) that you would prefer a mentor assigned to your projects? Please select any that applies. *

☐ An IS project mentor would be helpful.

☐ Avoid the trial and error approach.

☐ Increase the probability of success

☐ Enhance the trust of senior management.

☐ Want a better managed IS project.

☐ Want an expanded knowledge of career path and options.

☐ Be effective as a IS project manager.

☐ Other - Please specify

17. **What would be the reason(s) that you recommend the adoption of mentoring to your peers or colleagues? Please select any that applies.** *

☐ An IS project mentor would be helpful.
☐ Avoid the trial and error approach.
☐ Increase the probability of success
☐ Enhance the trust of senior management.
☐ Want a better managed IS project.
☐ Want an expanded knowledge of career path and options.
☐ Be effective as a IS project manager.
☐ Other - Please specify

18. **What is the nature of mentoring in your IS project? Please select any that applies.** *

☐ Formal
☐ Informal.
☐ Internal mentor.
☐ External mentor.
☐ Mentor is of much more experience than me.
☐ Mentor is of less experience than me.
☐ Mentor is of equivalent experience like me.
☐ Other - Please specify

19. **What would be you think is the nature of mentoring in the IS project? Please select any that applies.** *

☐ Formal
☐ Informal.
☐ Internal mentor.
☐ External mentor.
☐ Mentor is of much more experience than me.
☐ Mentor is of less experience than me.
☐ Mentor is of equivalent experience like me.
☐ Other - Please specify

Section B.

20. **What is the mentoring relationship like? Please select any that applies.** *

☐ Assigned by immediate supervisor / manager (boss).

☐ Self assigned.

☐ Meet mentor in person.

☐ Meet mentor in virtual (electronic) space.

☐ Other - Please specify

[   ]

21. How is mentoring schedule within the IS project management process? Please select any that applies. *

☐ On a scheduled basis.

☐ On a need basis.

☐ On an ad-hoc basis.

☐ As per instructed by management.

☐ When crisis hits.

☐ Other - Please specify

[   ]

22. Please state your agreement or disagreement to the following statements. Please select one option for each row.
"The reasons for the adoption and application of mentoring are :"

	Strong Agree	Agree	Neither	Disagree	Strong Disagree
Need the guidance, support and encouragement of a more experience IS project manager *	○	○	○	○	○
Encouraged by immediate superior / manager (boss) to do so. *	○	○	○	○	○
Recommended by my peer and colleague. *	○	○	○	○	○
Comfortable in the solicitation of input and opinion on any issue. *	○	○	○	○	○
Promotes learning on the job. *	○	○	○	○	○
Helps my career. *	○	○	○	○	○
Wants to realise the benefits of mentoring. *	○	○	○	○	○
It is part of a statutory (government or professional bodies affiliation or related) fulfilment requirement. *	○	○	○	○	○
It is part of management and company policy. *	○	○	○	○	○
The need to ensure project success. *	○	○	○	○	○
Assists in the development of my professional network *	○	○	○	○	○
Complements the current project management methodologies and tools *	○	○	○	○	○

	Strong Agree	Agree	Neither	Disagree	Strong Disagree
Helps in the realisation and improvement of my project management hard skill such as technical knowledge. *	○	○	○	○	○
Help in the establishment of my project management soft skills such as negotiations & communications. *	○	○	○	○	○
Availability of a free and open exchange of knowledge and experience *	○	○	○	○	○

23. Please state your agreement or disagreement to the following statements. Please select one option for each row.
"The followings are considered as key mentoring adoption characteristics :"

	Strong Agree	Agree	Neither	Disagree	Strong Disagree
An formal and organised approach *	○	○	○	○	○
An informal and on a as-required basis *	○	○	○	○	○
A learning-to-do approach *	○	○	○	○	○
A leaning-to-be approach *	○	○	○	○	○
A leaning to-see approach *	○	○	○	○	○
A trusted and confidence adoption *	○	○	○	○	○
A hand holding approach *	○	○	○	○	○
Devils advocate approach *	○	○	○	○	○
Same gender as project manager *	○	○	○	○	○
Empathise with IS project manager *	○	○	○	○	○
Regarded as an exemplary by others *	○	○	○	○	○
Driven by technical knowledge *	○	○	○	○	○
Driven by business domain knowledge *	○	○	○	○	○

24. Please state your agreement or disagreement to the following statements. Please select one option for each row.
"The adoption of mentoring in IS project would deliver :"

	Strong Agree	Agree	Neither	Disagree	Strong Disagree
Better control of project schedule / deadline *	○	○	○	○	○
An expanded knowledge of career path and options *	○	○	○	○	○
Better management of project stakeholders and executive sponsors *	○	○	○	○	○
Development of project interpersonal and communication skills *	○	○	○	○	○
Better management of project resources *	○	○	○	○	○
Contribute to project knowledge base of the organisation *	○	○	○	○	○

Accessibility to the wealth of professional expertise and experience of my project mentor *	○	○	○	○	○
Better anticipation of project risk *	○	○	○	○	○
Increase probability of project success *	○	○	○	○	○
Better cost containment / control *	○	○	○	○	○
Increase my confidence as a project manager *	○	○	○	○	○
Knowledge gain from another perspective and learning new ideas *	○	○	○	○	○
Enhanced trust of the senior management due to the presence of a more experienced mentor *	○	○	○	○	○
Improved overall risk of the project management *	○	○	○	○	○
Avoid learning by the trial and error method *	○	○	○	○	○
Increase and boost honour, recognition and self-esteem *	○	○	○	○	○
Enable and provide feedback, reflection and introspection of the project *	○	○	○	○	○
Better resolution of project issues *	○	○	○	○	○

25. Please state your agreement or disagreement to the following statements. Please select one option for each row.
"The obstacles in the adoption of mentoring in IS project are :"

	Strong Agree	Agree	Neither	Disagree	Strong Disagree
Lack of information in the determination of mentoring adoption *	○	○	○	○	○
Lack of support and encouragement from immediate supervisor / manager (boss) *	○	○	○	○	○
Lack of available time within the project schedule *	○	○	○	○	○
Required management approval *	○	○	○	○	○
Mentoring increases overall project cost *	○	○	○	○	○
Budgetary considerations *	○	○	○	○	○
Uncertainty about how it works *	○	○	○	○	○
Management no supportive of mentoring approach *	○	○	○	○	○
Negative attitude that the IS project manager would be perceived as not competent or not up to mark *	○	○	○	○	○
Too time consuming a process to adopt *	○	○	○	○	○
Lack of understanding or perspective of mentoring *	○	○	○	○	○

Non-availability of suitable mentors / experience project managers *	○	○	○	○	○
Other project responsibilities interfering with mentoring *	○	○	○	○	○
Fearful of potential personality conflict *	○	○	○	○	○
Lack of incentives to adopt mentoring *	○	○	○	○	○
Don't know if its right for me *	○	○	○	○	○

26. Please state your agreement or disagreement to the following statements. Please select one option for each row.
"My recommendations to any IS project manager are:"

	Strong Agree	Agree	Neither	Disagree	Strong Disagree
Mentoring be adopted within all the IS project management process cycle. *	○	○	○	○	○
Mentoring be adopted within selected IS project management process cycle. *	○	○	○	○	○
Mentoring to be made mandatory. *	○	○	○	○	○
Mentoring to be encouraged and be adopted on a need basis. *	○	○	○	○	○
Mentor need to be sourced from within the organisation. *	○	○	○	○	○
Mentor must be some one who much more experience than the project manager. *	○	○	○	○	○
Mentoring must not be adopted at all. *	○	○	○	○	○
Mentor assigned must be from external source. *	○	○	○	○	○

27. What is your general attitude towards mentoring? Please select any that applies. *

- ○ Very Positive
- ○ Positive
- ○ Neutral
- ○ Negative
- ○ Very Negative
- ○ Other - Please specify [   ]

28. How would you rate your knowledge on mentoring? Please select any that applies. *

- ○ Excellent
- ○ Very Good
- ○ Moderate
- ○ Poor
- ○ No Knowledge
- ○ Other - Please specify [   ]

29. What are your sources of information of mentoring knowledge? Please select any that applies. *

☐ Personal experience
☐ Observing others in my work unit
☐ Reading about it
☐ Discussions with peers
☐ Internet
☐ University or institution of higher learning
☐ Other - Please specify [   ]

30. What are your perceptions concerning mentoring in IS project management? Please select any that applies. *

☐ Mentoring is only for the "high potential" IS project manager.
☐ Mentoring is for those IS project manager who have not made the grade.
☐ Mentoring is an effective method of developing your potential.
☐ Mentoring can only be effective when one's immediate superior / manager (boss) is involved
☐ Spontaneous or natural mentoring is best.
☐ Other - Please specify [   ]

31. End of Survey.

Appendix B. Profile of the 46 research participants

	Participant Code	Gender	Description
1	PM-01-21	Male	IT Implementation Service Provider
2	PM-02-06	Male	Computers & IT Supplier
3	PM-03	Female	Manufacturing & Distribution
4	PM-04	Female	IT Implementation Service Provider
5	PM-05-16	Male	IT Implementation Service Provider
6	PM-16-11	Female	Manufacturing & Distribution
7	PM-07	Male	IT Implementation Service Provider
8	PM-08-05	Female	Computers & IT Supplier
9	PM-09	Male	Computers & IT Supplier
10	PM-10	Male	IT Implementation Service Provider
11	PM-11-02	Male	Computers & IT Supplier
12	PM-12	Male	International Television
13	PM-13-15	Male	IT Implementation Service Provider
14	PM-14-08	Male	Computer Security
15	PM-15	Male	Computers & IT Supplier
16	PM-16	Male	Consulting & Investment Services

	Participant Code	Gender	Description
17	PM-17-10	Male	Consulting & Investment Services
18	PM-18-03	Male	International Courier Services
19	PM-19	Male	Computers & IT Supplier
20	PM-20-14	Female	Engineering
21	PM-21	Male	Computers & IT Supplier
22	PM-22	Male	Computers & IT Supplier
23	PM-23	Male	Manufacturing & Distribution
24	PM-24-20	Male	Banking & Finance
25	PM-25-17	Male	Telecommunications
26	PM-26	Male	Manufacturing & Distribution
27	PM-27	Male	Computer Security
28	PM-28	Male	Engineering
29	PM-29-19	Male	Computers & IT Supplier
30	PM-30-12	Male	International Television
31	PM-31	Male	Engineering
32	PM-32-07	Male	IT Implementation Service Provider
33	PM-33-04	Male	Computers & IT Supplier
34	PM-34	Male	IT Implementation Service Provider
35	PM-35	Female	Telecommunications
36	PM-36	Female	Telecommunications
37	PM-37	Male	Computers & IT Supplier
38	PM-38-01	Female	Semiconductor
39	PM-39	Female	Consulting & Investment Services
40	PM-40	Male	Semiconductor
41	PM-41-09	Male	Banking & Finance
42	PM-42-13	Male	Banking & Finance
43	PM-43	Male	Telecommunications
44	PM-44-18	Male	Telecommunications
45	PM-45	Male	Computers & IT Supplier
46	PM-46	Male	Engineering

Biographical notes

Felix B Tan is Professor and Associate Dean Research in the Faculty of Design and Creative Technologies at Auckland University of Technology. He served as the Editor-in-Chief of the *Journal of Global Information Management* for 15 years. He was also on the Council of the Association for Information Systems. He has published in journals including *MIS Quarterly, Information & Management, European Journal of Information Systems, Information Systems Journal, Journal of Information Technology, Communications of the AIS and Communications of the ACM.*
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Paul Leong was a practicing IS Project Manager before joining Auckland University of Technology initially with the Department of Business Information Systems and then the School of Computer and Mathematical Sciences, where he was with the Software Engineering Research Laboratory. He holds a PhD with research interests in IS project management and business process improvement