

Knowledge Retention Strategy: A Study on Quantity Surveying Firms Practice

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Abstract: Knowledge is increasingly recognised as an important asset in the construction industry. It has been critically important as the drivers for success for a knowledge driven business such as quantity surveying (QS) practices. However, the recent turnover trends among the QS employee is quite alarming and that the 'culture' will lead to loss to the QS firm in terms of manpower investments and loss of tacit knowledge. Thus, this research was carried out to determine the perception of the QS practices' employers on the importance of their knowledgeable employees and also to identify the strategies adopted by them in retaining their employees' knowledge. Semi structured interview was conducted among the QS firms' employers and their answers were recorded and transcribed. The findings revealed that the employers of the QS practices do regard their employees' knowledge as very important to them. In return, to retain their knowledgeable employees, several approaches have been taken namely in the development of company intranet, career development opportunities and establish recognition and reward system. Other approaches taken to enhance their employees' knowledge are done by sending out for training and conferences. The findings also revealed how the firm retains their knowledgeable staff through establishment of mentor-protégé relationship, cultivating an open communication environment, holding organisation meetings and conducting an exit interview should their employees wish to terminate their appointment. Based on the findings, the respondents have managed to set up well-planned knowledge retention strategies to overcome the high labour turnover as well as ensuring continuity of tacit knowledge within the firm.

Keywords: Knowledge management, knowledge retention strategy, quantity surveying practice

1. Introduction

Knowledge is increasingly recognised as an important organisational asset (Morris, P, 2004) and protected as a source of competitive advantage (Scarborough & Swan, 1999 as cited by Davis et al., 2007) It also has been recognised as one of the most important strategic resources that improves human ability to reacts effectively (Sanchez, 2003). According to Davis et al. (2007), professional services sector like quantity surveying (QS) are knowledge-based where knowledge is a key feature of the surveyor's portfolio and business strategy. This is synonym with the construction industry where its main business relies heavily on the knowledge and experiences of the professionals (Serpell et al., 2010). Hence, knowledge can be regarded as very important to the professional practices in achieving success, especially to QS practices as they are knowledge-driven in nature,

(Fong & Choi, 2006). Unfortunately, Serpell et al. (2010) and Fong & Choi (2006) stated that construction industry has yet to utilised a formal and structured systems in capturing and reusing knowledge. Hence it is troublesome to manage knowledge assets (Mohd Nor & Egbu, 2010).

Realising the problem, knowledge management via knowledge retention has been created to capture, share, apply, leverage and possibly create knowledge before employees leave the practices, or to onboard new employees to quickly get them up. Practices that weave knowledge retention strategy within their succession planning, work force development and human capital strategies, should progress well in the future (Liebowitz, 2011).

Besides, retaining employees in professional sector in the construction industry has gained more attention recently due to high number of turn over among the professional. It has been proven to generate lost in

investments in terms of knowledge accumulation from the training and experience sought by the employees. Thus, it is very important for the companies to retain their professional employees as demand for professionals is gradually increasing when the companies expand into new and diverse markets (Dainty et al., 1998).

As clients have stated their expectation on the QS services, it gives greater competition both internally (from the profession) and externally to provide professional service (Davis et al., 2007). In order to meet these challenges, quantity surveyors not only should improve their professionalism and status, but also enhance their knowledge in order to improve their expertise and serve better. This is why the needs for the knowledge to be captured, interpreted and ultimately transferred into useful forms for organisations (Razali & Martin, 2008).

2. Problem Statement

QS practice is one of the professional firms which provide construction professional services (CPS). According to Mohyin et al. (2009), CPS depends heavily on their knowledgeable employees to deliver their services. It was found by Egbu et al., (2005), quantity surveying field does not apply the employees' knowledge efficiently although the field is a knowledge-intensive sector. According to Lee et al. (2008), with regard to projects; structured processes were applied to mitigate the loss of knowledgeable employees but the findings suggest that there are not yet sufficient to fully retain knowledge capital. Since knowledgeable employees are the crucial asset in QS practices, Arif et al. (2010) it is crucial to take

dedicated approaches to retain employees' knowledge as they can leave the practices on various reasons.

The rate of inter-company mobility in construction field is high as compared with other industries (Dainty et al., 1998). According to Smither (2003), employee turnover can incur in significant cost of recruiting, hiring, training, administrative and productivity. The risk of losing clients will also rise with employee turnover. Besides, most practices underestimate the true cost of losing a good employee. Consequently, the failure in retaining knowledgeable employees could result in expensive turnover due to the expensive costs of finding, recruiting, hiring, training and developing another employee. It will then disrupt the employer's business and clients.

In addition, Dainty et al. (1998) explained that the loss of knowledgeable employees has significant long term effects which are consequently passed on the clients in the form of higher tender prices. This will then contribute to inefficiency of QS practices and adversely influences the practices' competitiveness in facing competition. On a similar note, Lee et al. (2008) contended that the loss of employees could have a significant impact on the out-turn of a project. In order to maintain sustainable competitive advantage within the construction sector, there is a need to recognise the essential knowledge that employees possess and consider how this may be leveraged and retained within the organisation.

Egbu et al. (2005) explained that retaining knowledge is important because it could foster a sustainable

competitive advantage among QS practices. Therefore, quantity surveyors should improve their professionalism and status by retaining knowledge for the sake of getting the competitive advantage (Davis et al., 2007). Egbu et al. (2005) also stated that the loss of critical knowledge due to retirement, downsizing and outsourcing could be prohibited by capturing the knowledge.

Hence, knowledge retention is essential in order to maintain competitive advantage among the professions. This shows that by retaining employees, it will help to capture crucial knowledge in the QS field. It will indirectly maintain the human assets of QS practices by the employee retention approach. Since the knowledge retention is significant, it is important that QS practices will take appropriate approaches to retain it. Due to issues highlighted in the problem statement, the objective of this research is to determine the perception of the employer's of quantity surveying practices on the importance of their knowledgeable employees and identify the strategies adopted by them to retain the knowledge embedded among their employees.

2.1 Definition of Knowledge Retention

Knowledge retention is an important part of knowledge management (Liebowitz, 2009). According to Newman and Conrad (1999), knowledge retention is the activity that preserves the knowledge and reside it in the system once introduced. It also includes those activities that maintain the viability of knowledge within the system.

Knowledge retention will become significant when one of this scenario approaches such as older workers age

and approaches their retirement age, changing work patterns among the younger workers who are less likely to stay with one employer for more than a few years. Hence, it becomes crucial to find approaches that best control and retain their knowledge before they leave the organisation. Besides, knowledge retention can also improve innovation, organisational growth, efficiency, employee development and competitive advantage within the organisation (Liebowitz, 2009).

2.2 Objectives of Knowledge Retention

Knowledge retention is one of the knowledge management practices. According to Basiulis (2009), by having a solid and effective knowledge management practices and solutions, it will allow employees to search the information required to do their jobs faster. Besides, it will also make training the employees faster and more efficient and help ensure employees where they fit in the organisation and how their jobs contribute to the company's goals.

According to Liebowitz (2009), the objective for performing knowledge retention is to increase the institutional memory in the organisation. It enables the employees to learn lessons from the past successes and failures to ensure positive results. Thus, they can prevent from making a wrong decision. Besides, practising knowledge retention approach enables knowledge to be possessed at all stages within the organisation regardless of level. For instance, the administrative employee may know the ins and outs of getting certain paperwork

approved. This administrative knowledge is valuable to the organisation.

Almost a decade later after the Latham & Egan reports, research continues to show that the loss of critical knowledge is problematic and incurs unnecessary waste that can impact project success (cited by Lee et al., 2008). The Agile Construction Initiative conducted studies which revealed that the movement of employees during projects was a potential problem; and the 'knowledge void' incurred could affect the design or production processes (Hall, 2002, Hall & Lee, 2003 as cited by Lee et al., 2008). Thus, knowledge retention must be an ongoing effort that starts at the first day when the employee arrives (Liebowitz, 2009).

2.3 Strategies of Knowledge Retention

According to Liebowitz (2009), organisations should try to develop knowledge retention strategies before it occurs, to prevent the knowledge from walking out the door. He proposed that a structured approach to knowledge retention should be taken at least 2 to 3 years before a retiree becomes eligible. It is advisable to retain knowledge from the first day of employing the worker, as we do not know when they will leave, due to retirement, demographic change, death or promotion. For instance, if the process of capturing lessons learned or best practices was part of the employee's life cycle development, then knowledge would be captured from the initial conceptual design through implementation and maintenance, that is, from the start of the project till the end date.

Furthermore, Liebowitz (2009) suggested that junior and senior employees should be paired to make the sharing and leveraging of knowledge more efficient. This is why the employees in QS firms are paired in two people consists of a junior and a senior, by the employer in order to create a smooth knowledge sharing process, and indirectly instil the knowledge retention strategy.

Lee et al., (2008), claimed that retaining the organisations' knowledge was found to be the most powerful strategies for capturing tacit knowledge were project milestone reviews, communities of practice (CoPs), internal networks, knowledge sharing conferences, and interviews; action (project) reviews are also considered as a frequently used approach. In retaining explicit knowledge, many depends on collaboration tools such as CoP workspaces, engagement team databases and issues, that their employees applied as a part of their daily activities. Other techniques seldom used are content management systems, document management systems and network shared folders or drives (Leavitt, 2002 as cited by Lee et al., 2008).

Frappaolo & Wilson (1999) said that "the tacit knowledge base accounted for as much as 75% of an organisation's collective knowledge" and in similar note, Sheehan et al. (2005) claimed that "some 80% of useful knowledge is tacit and cannot be written down" (cited by Lee et al., 2008). In the paper of Lee et al. (2008), he asserted that neither of these resources provides any rigid proof to support the claims. Surveys conducted by the Delphi Group, did suggest that an important quantity of

corporate knowledge was embedded within the organisation employees' minds as depicted in Figure 1.

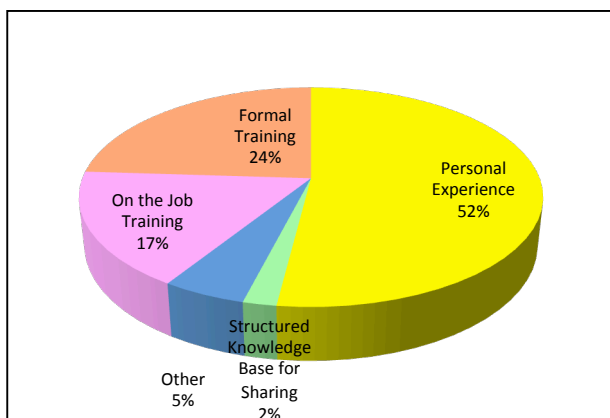


Figure 1: Repositories of corporate knowledge sources (Frappaolo and Wilson, 1999 as cited by Lee et al., 2008)

Leavitt's (2002) report stated that the most effective approaches in knowledge retention are CoP, face-to-face team or departmental meetings, electronic mail, individuals consulting with an expert and apprenticeship programs. Frappaolo & Wilson's (1999) research also found that some 90% of knowledge transfer carried out through human contact; with 52% coming through personal experience and another 41% come from formal and informal training, and less than 10% were reported as occurring through other methods (cited by Lee et al., 2008).

Liebowitz (2009) asserted that there are several knowledge retention strategies, such as interviews, mentoring, cheat sheets and exit interview. First-hand knowledge can be obtained through interview method where the interview should be in semi-structure form, and certain topics are prepared in advance, that allow for adaptability in order to maximise the content of interview. Besides, it should be conducted among the themes of decision making and specifically strategic and tactical

decisions made in the organisation. The interview session should be scheduled in advance, and the duration will last no longer than two hours. The questions tailored for the interviewee will be prepared and sent to the interviewee before the actual interview session in the purpose of better content and time usage. The interview session will also be audio-recorded, with the permission of the interviewee, and will be transcribed for better understandability.

Furthermore, formal mentoring programs are some of the usual method for knowledge retention, where the knowledge is shared and transferred. These programs are being practiced whereby the mentors and their mentees meet regularly to boast knowledge exchange (Liebowitz, 2009). In addition, 'cheat sheets' technique can also be applied. Cheat sheets are notes, templates shortcuts or simple heuristics. Most employees possess their own cheat sheets to allow them to quickly accomplish their organisational task or goal. Cheat sheets are treated as quick reference which facilitate the owner's memory in getting thing done. It is better to put the cheat sheets on the organisation's intranet, thus other employees can take advantages from them as well. They can be part of the continuity book. Cheat sheets retain knowledge in a codified manner (Liebowitz, 2009).

Moreover, Liebowitz (2009) said that the exit interview technique is has been implemented by most of the organisation before the employee leaves. Exit interview can provide a snapshot of knowledge, but the research shows that many organisations try to capture employees' knowledge within 3 months before they leave and have been largely unsuccessful in doing this.

A knowledge retention program should be planned in advance whereby the employees' knowledge is captured at least 2 to 3 years before they retire. It is ideal to carry out the knowledge retention program from the first day of the employee's working day through the last, as employee may quit or leave the organisation before the retirement age. In order to get greater likelihood for successful knowledge retention, the knowledge should be captured at different stages of the employees' career. This is because the employees may not even remember the earlier stage of their knowledge at the later stages; thus, ongoing knowledge retention from the first day is very useful.

Much of the knowledge to be captured is not only in the employees' technical knowledge base but also in their social network relationship. The organisation may lose the employees' relationship knowledge when an individual leave the organisation, in terms of social bond that exists between the employee and these individuals.

2.4 Barriers to Knowledge Retention

Newell et al. (2006) had identified some limitations in knowledge retention. The limitations include lack of systems and tools for reporting experiences, focus on successful delivery project milestones which distracted employees from reflection on processes, documentation at project reviews and milestones which was not lessons learnt but outputs achieved and lack of awareness that knowledge transfer has occurred or is needed.

Furthermore, Greengard (1998) stated that there have barriers in the transformation of knowledge through individual socialisation, such as unwillingness on part of

individuals to share information, reluctance on part of others to use the information and hesitation on part of experts to collaborate with other experts. Besides, Olomolaiye (2007) contended that high levels of task differentiation, occupational specialisation and also organisational stratification will affect the knowledge retention (cited by Arif et al., 2010).

According to Rezgui (2001), there are some barriers that limit the knowledge retention approach in the construction industry. Among the key factors for these limitations are:

- much construction knowledge, by necessity, embeds in the minds of the individual
- the intent behind the decisions is often not recorded or documented.
- the individual who have knowledge about the project are likely to leave for another project at the end of the construction stage; hence their input is not captured.

As such all these three limitations clearly indicates the direct correlation with the human factor in the construction industry and underlines the importance of knowledge and the people-centred approach to overcome these limitations (cited by Pathirage et al., 2007). Liebowitz (2000) also suggested some barriers in implementing knowledge retention as:

- lack of successful KM model in QS profession
- unwillingness to change the current operating system

- unwillingness of employees to share their knowledge
- difficult to value the intellectual capital and show the tangible benefits
- misunderstanding KM with information management

According to Liebowitz (2009), in implementing knowledge retention efforts, the organisations might encounter some obstacles. One of the key barriers is that people may prefer to be knowledge hoarders rather than knowledge sharers. Another obstacle to the knowledge retention may be the conception of it is impossible to capture 20 or 30 years of experience in 4 or 5 hours of exit interview.

The knowledge retention program must be focused on specific topic by the reason of limited duration. A third obstacle is that the knowledge retention strategy may be misaligned with the strategic mission of the organisation. If the knowledge management strategy fails, it may be due to either the knowledge management strategy not attained with the strategic mission of the organisation or the knowledge management strategy was poorly planned. The same holds true to the knowledge retention strategy. It should not be isolated from the overall organisation process; on the contrary, knowledge retention strategy should compromise with the mission of the organisation.

2.5 Knowledge Retention Process

According to Arif et al. (2009), knowledge retention process has a lot wider scope, starting from the capturing

of tacit knowledge to retrieval and updating of the stored knowledge. It is presented in four main steps, which are personalisation or socialisation, codification or externalisation, combination or renewal and internalisation.

In the first step of socialisation, it involves knowledge sharing at individual level. This is a step where employees share their tacit knowledge with others through discussions, chats or simply socialising (Arif et al., 2009). Employees are key elements to organisational knowledge creation (Bender & Fish, 2000; Nonaka, 1994). Nonaka (1994) mentioned that building trust between individuals, proposing self-organising teams to build trust, sharing experiences and facilitating face-to-face communication are necessary in order to acquire and share experience. Syed-Ikhsan and Rowland (2004) explained that knowledge transfer requires the willingness of a group or individual to work with others and share knowledge to their mutual benefit. Thus, the effectiveness of a knowledge retention system strongly depends on how willing people are to socialise and how the organisation facilitates the process of socialisation (Arif et al., 2009).

In the second step, codification involves the conversion of tacit knowledge into documented explicit knowledge through minuting and documenting meetings and forums (Arif et al., 2009). According to Rice and Rice (2005), the explicit knowledge created should be a strong reflection of best practice within the organisation and able to be easily understood outside its linguistic, organisational and cultural context. Patel et al. (2000) define explicit knowledge as the most common type of

knowledge, which is readily available and can be codified in a way that makes it easily transmissible. It can be found in wide range of sources, such as minutes of meeting and the internet.

In the third step of combination, knowledge is constructed, collected and compiled in organisational memory, through the use of database. Knowledge is stored in database and archived so as to enable its access when it is needed in the future. This level will measure the effectiveness of storage of documented knowledge (Arif et al., 2009). McManus et al. (2004) stated that the knowledge must be arranged in an organised form, so that it can be available when and where required based on necessity. Thus, the determination of how to properly document the knowledge is critical. Knowledge in the form of data and information can be stored in many ways with access for all employees. It can also be transferred in e-mail, intranet and video conferencing.

In the last step, internalisation process is concerned with the ease of accessibility and retrieval of stored knowledge. Once it is retrieved and utilised, there is a possibility that new and more up-to-date knowledge has been updated (Arif et al., 2009). Gammelgaard and Ritter (2005) discussed that the knowledge retrieval process consists of search and decoding processes. Search is which the retained information is selected as relevant to a particular goal, whereas decoding is the reconstruction of the selected information to meet the users' needs.

Therefore, it is useful to divide the knowledge retrieval process into two steps which are the

identification of knowledge and the receivers' individual decodification of the accessed knowledge.

2.6 Drivers for Successful Implementation of Knowledge Retention

According to Arif et al. (2010), there are some major factors which are highlighted as crucial for the success of knowledge retention, namely culture, organisational structure, top management support, configuration management, publicity and marketing, training, IT system with ability to capture multiple formats, and reward and recognition.

Organisational structure on knowledge retention can be complex when organisational structure can be operational into centralisation, complexity, stratification and formalisation. Centralisation of an organisation means that to what extent the authority and decision making is concentrated at the top. Complexity is concerned with the number of occupational specialisation and task differentiation. Stratification describes about the number of status, layers or levels; and formalisation clarifies on the degree of emphasis placed on following rules and procedures in role performance. In the paper of Arif et al. (2010), it suggests that low level of centralisation will allow greater ease in knowledge retention at the unit level.

In addition, employees will always overlook the knowledge retention system due to their tight work and project deadlines, and the time consumed in documenting, saving and retrieving knowledge.

Thus, top management should be committed to the knowledge retention process and have budgetary provisions for charging the time involved in using and updating the system. Besides, the management also needs to encourage employees to adopt the system more frequently and effectively. Top management should take some initiatives like sending emails to employees, having discussion of knowledge retention system in employee meeting and placing poster and publicity material about the system all over the facility could encourage knowledge retention in the organisation.

Furthermore, configuration management has correlation with the knowledge retention system. The archiving system requires a numbering policy or system in place that archives the files in some sort of chronological order. Besides, the files can be arranged by using keywords and cataloguing. Configuration management is crucial to ensure that two people saving knowledge about the same issue archive it under the same catalogue for making the future retrieval easier. A list of keywords in a database or having an administrator for the system monitoring the new entries is significant and will bring benefits to configuration management and proper cataloguing.

Every organisation should have a well IT system in order to provide a technology platform that is fully operational for the employees. Besides, it is necessary to have awareness campaigns to highlight the benefits of knowledge sharing leading to organisational knowledge retention and training for people on how to use the available technology platform to share their knowledge as

well as apply knowledge from the past. By having a fully operational IT system and providing on IT system for employees, the company could implement the knowledge retention successfully.

Additionally, in order to be successful at knowledge retention activities in the organisation, the reward and recognition structure must be embedded within the daily working lives of the employees, and the employees must be recognised for accomplishing the knowledge retention functions. People generally like to be recognised and/ or rewarded for their efforts. Intrinsic motivators are typically more lasting than the use of extrinsic motivators. People want to be recognised in some manner, such as giving praise to people at meeting, writing in the organisation's bulletin board or e-newsletter what they have done by mentoring others, or simply say "thank you" to appreciate their effort. The reward does not necessarily mean to money. Giving a "Best Mentor" Award or a "Significant Learning" Award may be beneficial to show that someone's knowledge retention effort is valued and appreciated by the organisation (Liebowitz, 2009).

According to Liebowitz (2009), the successful implementation of knowledge retention is not only depends on the factors that have been mentioned as above, the driver of bidirectional knowledge flow is also one of the pillars of knowledge retention. Bidirectional knowledge flow refers to the flow of knowledge from bottom up and top down. This has two meanings which the senior employees can pass knowledge down to junior employees, but also junior employees can transfer some of their specific knowledge to senior employees. It is not

without a doubt that senior employees have many years of experience and have accumulated a wealth of knowledge over their working lives. Their valuable knowledge should be retained and transferred to other members in the organisation. Similarly, junior employees may have specialised knowledge that also need to be retained and transferred to those in the organisation. This two-way capture and flow of knowledge will bring benefit to the viability and longevity of the organisation.

Moreover, another important pillar in knowledge retention is personalisation and codification. Personalisation underlines the “connection” part of knowledge management, and codification emphasises on the “collection” or systems components. These two approaches can be used in capturing and transferring knowledge. For instances, personalisation approach for knowledge retention and transfer including mentoring, communities of practice (CoP), job rotation and other methods to facilitate connection between people. Codification approaches are usually systems oriented, such as the use of lessons learned, after-project reviews, knowledge repositories on the intranet and other systems-oriented approaches. Codification approaches help to transfer tacit knowledge into explicit knowledge so that it can be easily be shared and retained.

4. Research Methodology

The respondents of this study are quantity surveying practices in Johor. The data were collected through face-to-face interview. The questions were designed to determine the perception of the quantity surveying

employer’s on the importance of their knowledgeable employees and also to identify the strategies adopted by them to retain the knowledge embedded among their employees. Ten respondents were randomly selected for the interview section. The data were then tabulated and analysed by using Content Analysis Method. The interview data was transcribed in order to extract the data collected which is then coded to generate themes for analysis.

5. Results and Discussion

5.1 The Perception of the QS Practices on the Importance of their Knowledgeable Employees

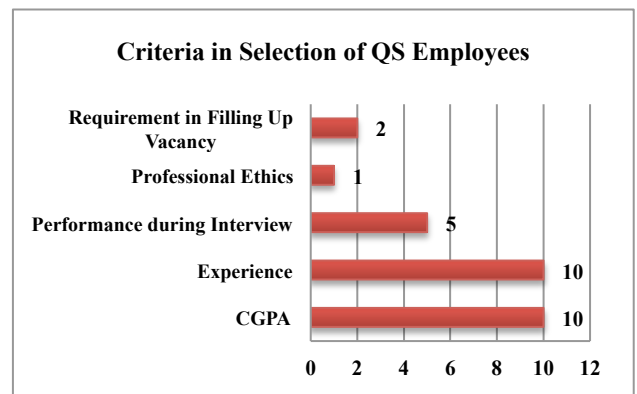


Figure 2: Criteria in selection of QS employees

Figure 2 shows the criteria in selection of QS employees exercised by the firms. All the respondents claimed that both criteria of good CGPA and experience are important in selecting new QS employees. Good academic qualification and experience are required to satisfy client’s needs. As the QS practices are driven by their knowledge nature, QS employees must have sufficient technical knowledge and experience in costing and

measuring in order to fulfill professional duty. In addition, Figure 2 shows that performance during interview session is one of the criteria in selecting new QS employees. Performance during interview will give the first impression to the recruiter.

Additionally, the selection of QS employees is not only emphasised on the criteria embedded on the employees, but also depend the QS practices' requirement in filling up a particular vacancy. Based on Figure 2, two respondents asserted that the requirement in filling up a particular vacancy was also one of the criteria.

Besides, one respondent stated that he would scrutinize the professional ethics of the employees during the selection. The employer would ask the employees on the reason in leaving the previous practice. In the event that the employees did not have a good reason in leaving the previous practice, it can be concluded that the person does not have a good professional ethics of responsibility.

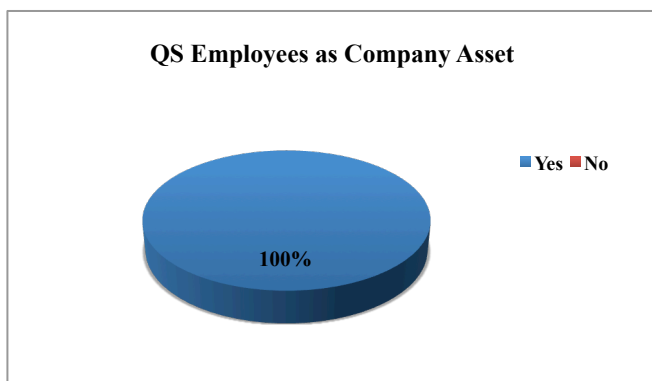


Figure 3: QS employees as company asset

Based on Figure 3, it shows that all the respondents regarded their QS employees as the company asset. QS employees are human asset belonging to the firms who could improve the practices' performance and bring them competitive advantages.

In addition, all respondents perceived their QS employees as very important to them. Since QS practices are driven by knowledge and majority of the knowledge was embedded within QS employees, the practices were depended heavily on QS employees in conducting QS jobs and meeting clients' requirements.

Figure 4 shows the expectation of QS employers on their employees. According to Fong & Choi (2006), QS practices are characterised by knowledge-driven nature, thus knowledge is very important in QS field. The figure above shows that all the respondents expected knowledge contribution from their QS employees.

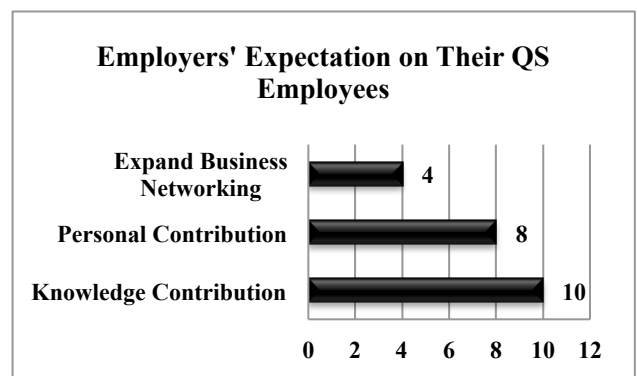


Figure 4: Employers' expectation on their QS employees

Besides, eight respondents desired their employees to give personal contribution to their practice, such as commitment, independent, willingness to learn and team working. For instance, if the employees are willing to learn and give full commitment to the practices, it will help them to achieve higher performance.

Lastly, only four respondents hope their employees to expand the business networking. This contribution is not so easy to obtain from the employees. Since the junior employees have very few years of experience in the

practices and they are hard to give aid to the practice in expanding the business networking, thus the employers will only depend on their senior employees in this expectation. Besides, employers may expand their business networking in the later stage of their business life in spite of depending their senior employees.

5.2 The Strategies Adopted by the QS Practices on Retaining Employees' Knowledge

In Figure 5 below, shows that all of the respondents had exercised knowledge retention in their practices.

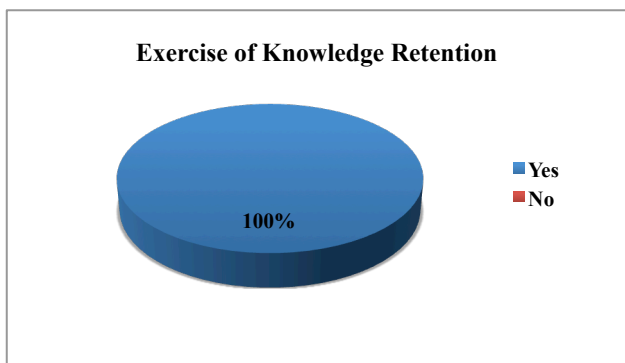


Figure 5: Exercise of knowledge retention

Figure 6, shows a total of 60 percent of respondents used partially digitised method in storing and retaining the knowledge, which some of the information was stored in soft copy, whereas other document like standard form of contract was stored in hard copy. Examples of the data that stored in soft copy are project details, payment documents and quotations.

Another 40 percent of the respondents applied the fully digitised method in storing and retaining knowledge. They used collaborative software in retaining the knowledge, and encouraged green measures at the same time.

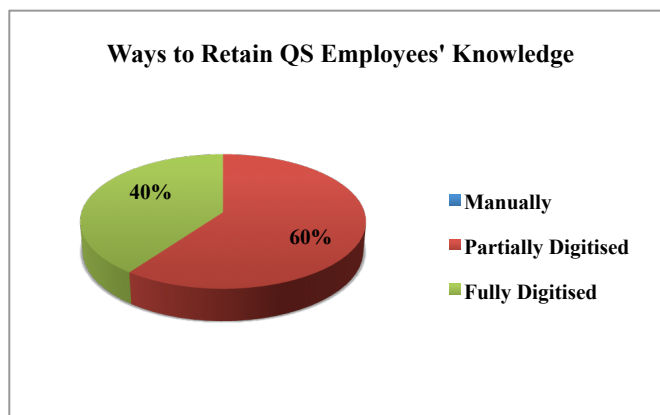


Figure 6: Ways to retain QS employees' knowledge

There is no specific method utilised to retain the knowledge of QS employees in their practices. Based on Figure 7, it shows the strategies used in capturing the knowledge that embedded within the QS employees. The figure indicates that all of the respondents have the opinion of carrying out organisation meeting, establishing open communication environment and instilling mentor-protégé relationship are the best solution in capturing the knowledge.

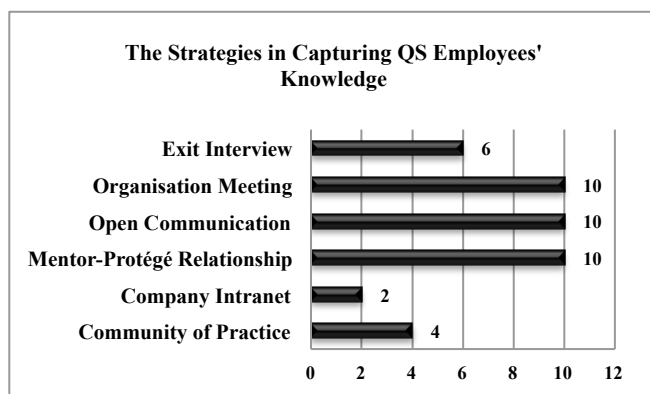


Figure 7: The strategies in capturing QS employees' knowledge

During the organisation meeting, a friendly and inviting environment should be made in order to encourage their employees to speak their ideas freely. Employees could raise their questions and problems in the

technical meeting, and thus all the members could discuss together in order to solve the problem. Besides, employees could also share their knowledge and experience. As a result, they could learn some lessons from other members' problem and gain knowledge through the meeting.

Furthermore, an open communication environment would give opportunities to the employees to communicate and share their knowledge and own insight. Besides, mentor-mentee relationship would bring advantage to the knowledge retention as the junior and senior employees were paired in order to make the knowledge sharing more efficient. For instance, one of the respondents said: *"I would assign the fresh employees under the supervision of senior employees in my practice. This not only could enhance the knowledge sharing process, but also improve their relationship"*. This portrayed the friendly working ambience was exercised within the practice.

In addition, six respondents mentioned that exit interview method was the best solution to capture the knowledge embedded in QS employees. When a particular employee left the practice, exit survey would be carried out and taking over list would be produced. This method would reduce the knowledge lost when a particular employee was leaving the practice. Exit interview would help to retain as much knowledge as possible that possessed by the employees.

Additionally, four respondents claimed that the community of practice approach was the best solution in capturing the knowledge embedded within the QS

employees. Community of practice is a method which a group of people share a common area of expertise or search for solutions to common problem. Thus, employees could share their expertise and knowledge, and even find out solution for problems faced through this approach.

Lastly, only two respondents asserted that company intranet approach was the best solution in capturing the knowledge. This is because all the employees could key in their operating practice and method of measurement which were used in handling a particular project. Besides, they could put the problems faced and solutions pertaining to a particular project in the practices' server, thus other employees could learn lesson from there and would not repeat the same problem in the future.

6. Conclusion

In conclusion, it shows that the QS practices perceived their knowledgeable employees as their important asset. On the other hand, it can be concluded that the strategies adopted in retaining employees' knowledge are carrying out organization meeting, establishing open communication environment, instilling mentor-protégé relationship, implementing exit interview, establishing company intranet and community of practice.

References

- Arif, M., Egbu, C., Alom, O., & Khalfan, M.M.A. (2009). Measuring Knowledge Retention: A Case Study of a Construction Consultancy in the UAE. *Engineering Construction and Achitectural Management*, 16(1), 92-108.
- Arif, M., Egbu, C., & Toma, T. (2010). *Knowledge Retention In Construction In The UAE*. Paper presented at the Procs. 26th Conference.

- Basiulis, K.E. (2009). The New Reality of the American Workforce: Knowledge Management As A Retention Tool. *Contract Management*, 76-85.
- Bender, S., & Fish, A. (2000). The Transfer of Knowledge and The Retention of Expertise: The Continuing Need for Global Assignments. *Journal of Knowledge Management*, 4(2), 125-137.
- Dainty, A.R.J., Bagilhole, B.M., & Neale, R.H. (1998). *Improving The Retention of Construction Professionals: A Soft HRM Approach*. Paper presented at the 14th Annual ARCOM Conference.
- Davis, R., Watson, P., & Man, C.L. (2007). Knowledge Management For The Quantity Surveying Profession. 1-16.
- Egbu, C.O., Hari, S., & Renukappa, S.H. (2005). Knowledge Management for Sustainable Competitiveness in Small and Medium Surveying Practices. *Structural Survey*, 23(1), 7-21.
- Fong, P.S.W., & Choi, S.K.Y. (2006). *A Framework of Knowledge Processes for Professional Quantity Surveying Firms in Hong Kong*. Paper presented at the Joint International Conference on Computing and Decision Making in Civil and Building Engineering, Canada.
- Gammelgaard, J., & Ritter, T. (2005). The Knowledge Retrieval Matrix: Codification and Personification as Separate Strategies. *Journal of Knowledge Management*, 9(4), 133-143.
- Greengard, S. (1998). Will Your Culture Support KM? *Workforce*, 77(10), 93-94.
- Lee, S., Parry, G., & Graves, A. (2008). *Managing Knowledge Resources for Sustainable Competitive Advantage*. Paper presented at the RICS Construction and Building Research Conference COBRA 2008.
- Liebowitz, J. (2000). Building Organizational Intelligence: A Knowledge Management Primer. *CRC Press*, 1-2.
- Liebowitz, J. (2009). *Knowledge Retention: Strategies and Solutions*: Auerbach.
- Liebowitz, J. (2011). Knowledge Retention: What Practitioners Need To Know. *KM World*, 12-13.
- McManus, D.J., Wilson, L.T., & Snyder, C.A. (2004). *Assessing the Business Value of Knowledge Retention Projects: Results of Four Case Studies*. Paper presented at the Decision Support in an Uncertain and Complex World: The IFIP TC8/WG8.3 Int'l Conference 2004.
- Mohd Nor, F., & Egbu, C. (2010). *An Insight Into Knowledge Sharing Practices In Quantity Surveying Firms In Malaysia*. Paper presented at the Procs 26th Annual ARCOM Conference.
- Mohyin, N.A., Dainty, A.R.J., & Carrillo, P.M. (2009). *Managing Knowledge Workers' Commitment In Small Construction Professional Firms*. Paper presented at the Procs 25th Annual ARCOM Conference.
- Newell, S., Bresnen, M., Edelman, L., Scarbrough, H., & Swan, J. (2006). Sharing Knowledge Across Projects Limits to ICT-led Project Review Practices. *Management Learning*, 37(2), 167-185.
- Newman, B.B., & Conrad, K.W. (1999). A Framework for Characterizing Knowledge Management Methods, Practices, and Technologies. from The Knowledge Management Forum:
- Nonaka, I. (1994). A Dynamic Theory of Organizational Knowledge Creation. *Organization Science*, 5(1), 14-37.
- Patel, M. B., McCarthy, T., Morris, P., & Elhag, T. (2000). *The Role of IT in Capturing and Managing Knowledge for Organisational Learning on Construction Projects*: Centre for Research in the Management of Projects (CRMP), UMIST, UK.
- Pathirage, C.P., Amaratunga, D.G., & Haigh, R.P. (2007). Tacit Knowledge and Organisational Performance: Construction Industry Perspective. *Knowledge Management*, 11(1), 115-126.
- Razali, M.N., & Martin, D. (2008). Knowledge Management Strategy For Malaysian Real Estate Business: A Conceptual Model. *The Professional Journal of The Institution of Surveyors, Malaysia*, 43(1), 16-24.
- Rice, J. L., & Rice, B.S. (2005). The Applicability of the SECI Model to Multi-Organisational Endeavours: An Integrative Review. *International Journal of Organisational Behaviour*, 9(8), 671-682.
- Sanchez, R (2003) Knowledge Management and Organisational Competence. Oxford: Oxford Univ. Press.
- Serpell, A.F., Massmann, C., & Ferrada, X. (2010). *Knowledge Management Practices in the Construction Industry*. Paper presented at the RICS Construction and Building Research Conference COBRA 2010.
- Smither, L. (2003). Managing Employee Life Cycles To Improve Labor Retention. *Leadership and Management in Engineering*, 19-23.
- Syed-Ikhsan, S.O.S., & Rowland, F. (2004). Knowledge Management in a Public Organization: A Study on the Relationship between Organizational Elements and the Performance of Knowledge Transfer. *Journal of Knowledge Management*, 8(2), 95-111.