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Roadmap for Redefining the Competencies of Malaysian Building Surveyors in the Post-COVID-19 Era

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Abstract

The construction sector has been heavily impacted, globally, and locally, by the COVID-19 crisis since the beginning of the Movement Control Order in Malaysia in mid-March of 2020. This situation has severely impacted construction practitioners, building surveyors and the construction industry overall. Adaptations are necessary to continue updating professional needs and skillsets while minimising the negative effect of the COVID-19 pandemic on the supply of, and demand for, building surveying services. To ensure the continuous improvement of surveying practice, this study asks, "What new competencies skillset is required by building surveyors in Malaysia to deal with the post-pandemic crisis?" Therefore, this study attempts to redefine a new set of competencies that Malaysian building surveyors will need to succeed in the post-COVID-19 era. The research data for this study was collected using a qualitative method approach that involved analysing and reviewing documents such as the guidelines, standards and policies from the national and international professional bodies that govern this profession. Based on the document review and analysis approach, the study highlights how fourteen competencies are emphasised by the five professional bodies governing the building surveying profession. The study provides significant benefits to building surveyors, who can improve their employability, as well as to fresh graduates and undergraduates preparing for the working environment. It also offers valuable insights for policy makers and surveying institutions on how to structure their adaptation and plans to overcome the challenges of the COVID-19 pandemic that will confront building surveying practitioners.

Keywords: Building surveying education, building surveyor, competency, Malaysia construction industry, COVID-19

1.0 INTRODUCTION

In the new global situation, the coronavirus disease (COVID-19) has become a central issue for construction employers and workers, as well as the construction sector itself. A key challenge is to respond to the current changes in Standard Operation Procedures (SOP), which aim to provide safe and healthy workplaces. Many countries, including Malaysia, have experienced high levels of viral infections, causing the implementation of national lockdowns and other restrictions on movement. This has been reflected in Malaysia, where the government enforced a nationwide Movement Control Order (MCO) after facing the second wave of the coronavirus. Starting on March 18, 2020, and ending on 3 May 2020, the MCO was one of the efforts to protect the health of Malaysian citizens and simultaneously to break the chain of COVID-19 infections.

With the COVID-19 pandemic continuing and the extraordinary numbers of daily reported cases to date, the Ministry of Health of Malaysia, the Malaysian government and other institutions in Malaysia have made considerable efforts to manage the coronavirus disease outbreak (Shah et al., 2020). The COVID-19 outbreak has severely impacted the global economy and trade, as well as simultaneously affected households, industrial establishments, financial institutions, businesses and infrastructure companies, as stated by Biswas et al. (2021). In the educational sector in Malaysia, for instance, public and private colleges and universities have faced financial pressures due to deferred student enrolments (Choong, 2020) during the first year that this infectious disease was discovered. At the early stages of the global pandemic, building surveying (BS) scholars, for instance, deferred their teaching and learning process and abruptly withdrew from normal campus life. Final year students undertaking final year projects, as well as those engaged in internships, practical training, and laboratory research, also faced the same circumstances.

Subsequently, based on various responses in state and local levels, construction practitioners and professionals, including building surveyors, have experienced varied impacts due to the pandemic. These impacts have demonstrated that built environment personnel, comprising surveying professionals, must also address business challenges, since the construction field is a vibrant sector that contributes

considerably to Malaysia's economic growth. Currently, few construction activities remain in operation, depending on the number of COVID-19 cases in a city or state, and whether a project is classified as essential. As with the education sector, COVID-19 has forced the construction industry to be flexible by adapting to the challenges and formulating solutions to mitigate the impacts of the disease.

Firstly, many studies have been published recently on the impacts of the COVID-19 crisis on the construction sector, as highlighted by Baker McKenzie (2021), Biswas et al. (2021), Gamil and Alhagar (2020), Esa et al. (2020) and Zamani et al. (2021). However, several shortcomings can be identified in these studies as they did not directly focus on the BS profession. The reviews by Shah et al. (2020) and Ng et al. (2020), for instance, appear to focus on the initiatives taken by the government and the control measures introduced to limit the spread of the COVID-19 pandemic in Malaysia. This research trend may be attributed to the extensive control strategies used to break the chain of COVID-19. Second, none of the previous studies discussed the direct impact of the coronavirus in the context of the higher learning institutions, organisations, academicians, and individuals involved in the field of building surveying. Recent studies by Hansen et al. (2021) and Noor et al. (2020), for instance, focused on the impacts of the COVID-19 outbreak towards quantity surveyors' construction projects and activities, as well as the reviews of required competencies for quantity surveyors, respectively.

Thirdly, other studies have also been noted as focusing merely on healthcare services and medical education (Almetwazi et al., 2020; Alqurshi, 2020; Sierpina, 2020; Tan et al., 2020) while disregarding the effect of the pandemic on professional career development (e.g., that of those involved in the built environment and construction). Another recent article by Esa et al. (2020) appears to focus on the negative impact of the MCO on the success of projects. Compliance with regulations, safety, the additional time needed for project delivery, increased development costs, the limited supply of human resources and the limited on-site resource availability are the main impacts of the MCO highlighted in the study by Esa et al. (2020). A study by Zamani et al. (2021) reports that financial aid and comprehensive information are needed to resolve the impacts of COVID-19 on building construction projects, in the context of the financial and operational issues that have arisen. The listed impacts and deficiencies have contributed to the setback in Malaysia's economic growth.

Furthermore, in terms of competency concerns and issues, previous research has demonstrated that the construction industry's rapid changes are placing higher performance demands on building surveying graduates to deliver high-quality professional services (Husain et al., 2017). Moreover, the recent demands for energy-efficient infrastructure, as well as higher-quality buildings and cities, require construction professionals and their workforce to continually enhance their personal capabilities and the quality of service they provide (CIDB, 2016). Furthermore, potential employees must address the fact that employers currently not only evaluate candidates for their academic qualifications, but also strictly appraise their delivery of quality. The latter is currently becoming the primary requirement as a measure of employment. The increasing demand for qualified employees, the current economic situation, and the continued limits on the construction industry sector due to the impacts of COVID-19 are likely to increase the competition for employment opportunities as well as the unemployment rate in Malaysia. As reported by the Department of Statistics Malaysia's official portal in 2021, the unemployment rate in June 2021 climbed to 4.8 per cent from the previous month's rate of 4.5 per cent.

Therefore, researchers believe that in addressing the challenges of COVID-19 and the highly competitive employment market, building surveyors, especially graduates, should develop their personal capabilities and the quality of service they provide in the era of COVID-19. Furthermore, in the post-pandemic era, they should ensure they remain relevant to the demands made on the industry. In view of this, further research should provide a comprehensive set of competencies that cover both local and international guidelines and policies, the aim being to deliberate and deliver on a broader perspective that would have wider implications for the global BS community.

Given the limitations of previous studies and in line with the identified gaps, this paper seeks to redefine the expected competencies of building surveyors in the post-coronavirus world. The rationale for the focus is that this outbreak has disrupted BS businesses and education worldwide, affecting architecture, engineering, the built environment, and the construction industry overall. Corresponding to the practice of BS as a professional service in the built environment and the construction industry sector, this study aimed to focus on the academic aspects of the topic. The question that therefore arises is as follows: which new competencies skillset is required by building surveyors in Malaysia to address the post-pandemic situation? The term new skillset here refers to the specific competencies required by building surveyors while performing their professional tasks as building inspectors, maintenance managers, building control and compliance advisors to the public, as well as other practitioners in the construction sector. To meet the research objective, the study reviews the existing documents - including guidelines, standards, and policies - that relate to building surveyors' professional competency. The documents are derived from local and international professional bodies that preside over the BS profession, including the Royal Institution of Surveyors Malaysia (RISM), the Public Works Department (PWD), the Royal Institution of Chartered Surveyors (RICS), the Australian Institute of Building Surveyors (AIBS) and the Hong Kong Institute of Surveyors (HKIS).

2.0 LITERATURE REVIEW

2.1 Building Surveying Profession

Among the group of professions within the construction industry, building surveyors are registered members of the RISM who become qualified through examinations and experience. They are competent in building control works and other activities related to the construction industry and the built environment. A professional building surveyor provides services at the planning, construction, maintenance and management stages. The practice in the United Kingdom (UK) is that Chartered Building Surveyors offer a variety of services to the built environment industry, for example, professional advisory services on construction and property-related matters (RICS, 2008). In addition to being members of the RICS facilities management professional group, many RICS-qualified facilities management professionals are also members of the BS group, while many originally have a BS academic background and qualifications (Hoxley, 2012).

UK and Malaysia, for instance, have professional bodies of surveyors governing the building surveyor vocation, such as the RICS and the RISM; they have accredited standing and a building surveying professional function within the construction industry, generally forming BS subgroups. The BS division of the RICS was established in 1973 (Kibblewhite & Wilkinson, 2004). Locally, there are 1,157 current active members of the BS Division, based on the Council approval dated April 2021, who can be fellows, members, graduates, probationers and students. Furthermore, there were 68 members of the Registered Building Surveyor (RBS) body and 13 Registered Building Surveying firms, as of March 2021 (RISM, 2021).

Furthermore, three RISM-accredited BS degree courses are offered by the leading public universities in Malaysia, namely, Universiti Sains Malaysia, Universiti Malaya and Universiti Teknologi MARA. The BS programmes offered by these universities have been recognised locally and internationally by professional bodies, including the RISM since 1996, the Chartered Association of Building Engineers (CABE) since 2002, and the RICS since 2006 (MQA, 2013). Reflecting the rapid growth and increased demand for BS graduates, in January 2012, the Programme Standards for Building Surveying were developed by the Malaysian Qualifications Agency (MQA), together with a panel of experts in the field, as an initiative to promote uniformity and meet the requirements of graduates who were conversant and competent. The Standards were approved in November 2012.

In addition to holding a RISM-accredited degree in building surveying or a related field, to become a Registered Building Surveyor and be eligible to join the Malaysian Association of Registered Building Surveyors (MyRBS), it is compulsory to pass the Assessment of Professional Competence pathways, as specified by RISM. These include the preparation of a logbook and work diary, in addition to a final professional examination and an interview with assessors who are BS practitioners. Candidates also need to demonstrate their experience by presenting a selected case study associated with the BS scope of work. Meanwhile, the RBS and other members should attend a regular series of Continuing Professional Development (CPD) sessions to retain their registration, as well as maintain and improve their skills throughout their careers.

Despite the excellent establishment of the BS profession in the UK, internationally, the profession has encountered low levels of awareness, a situation currently facing Malaysian building surveyors. The awareness issue regarding the BS profession outside the UK (which affects Malaysia) is ongoing, with concerns having been highlighted by researchers such as Kibblewhite and Wilkinson (2004) since 2004. Formally, there is little awareness of the BS profession outside the UK, compared with the architecture and quantity surveying professions, which are more widely recognised and whose offers of professional services are also widely accepted outside the UK (Kibblewhite & Wilkinson, 2004). These researchers also mentioned that within the UK, building surveyors' knowledge and expertise are widely recognised and used in property and construction markets; however, the BS profession remains inconspicuous in many overseas (non-UK) contexts (Kibblewhite & Wilkinson, 2004).

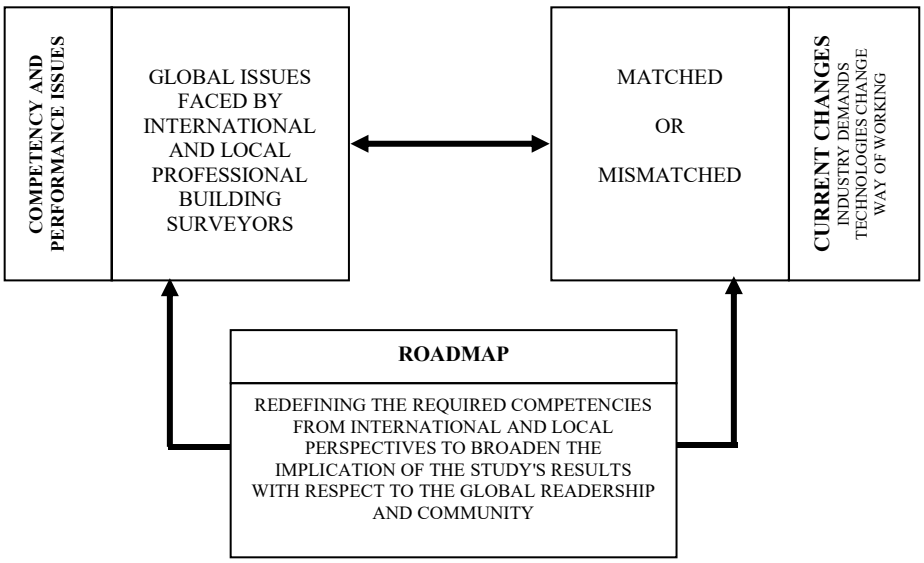

Figure 1 Benchmarking framework for identifying competency gaps among international and local building surveyor members

A research study by Isnin et al. (2016) agreed that awareness and knowledge of the existence of the BS profession remain poor due to the lack of information on, and recognition of, this profession. The development of this profession has been gradual and it generally remains misunderstood by both construction professionals and the general public (Ali & Chen, 2012; MQA, 2013). A study by Zaheer et al. (2021) successfully identified the essential competencies that international employers expect from graduates, which reflect three areas of significant development: knowledge, skill and personality-based competencies. From the perspective of local employers, a recent study by Husain et al. (2020) examined the mismatch between the supply of, and demand for, BS graduates' skills. The authors also suggested that graduates should acquire and demonstrate both the technical and non-technical skills desired within the industry. Consequently, following the extensive review of the literature on international and local building surveyors' performance and competency issues, the benchmarking framework was established, as shown in Figure 1. Current researchers recommend that the Malaysian BS profession needs a strong professional structure with a clear, coherent, and relevant identity to survive during and after the COVID-19 pandemic era. This highlights the significance of establishing a clear set of BS competencies in the context of local and international practice.

2.2 Building Surveyor Roles in Malaysia's Construction Industry

Building surveyors are mainly involved in the private or government sectors; alternatively, they operate as self-employed professionals. Traditionally, the scope of services of building surveyors in Malaysia includes building control administration, development and construction management, building works and building maintenance (RISM, n.d.). The specific scope of services of this profession in the construction industry, as agreed by the MQA, covers building control and compliance. Meanwhile, the scopes of services for other professionals such as engineers, architects, quantity surveyors and valuers cover building design, engineering/structure/infrastructure, cost and contract administration, and valuation or property services, respectively (Che-Ani et al., 2012).

The RISM has outlined the five primary services of a building surveyor, namely (1) building control and administration, (2) building works, (3) development and construction management, (4) building maintenance and (5) building insurance. These services are clearly stated in the 2021 BS Division on the RISM website. This profession may offer services in many aspects of physical development management, the supervision of a construction project's quality, and control over assessments of a building's physical condition (Ali & Chen, 2012). These services also include the restoration of new and existing buildings, as well as aspects of repair and maintenance (Ahzahar et al., 2015). In addition to the literature search, it has been suggested that the role of the building surveyor primarily covers building control and compliance, which includes maintenance and management; conservation and restoration; building inspections; building pathology; risk assessment and audit; construction and building completion; and green technology and sustainability (Ali & Chen, 2013; Che-Ani, 2013, 2014; Husain et al., 2018; Isnin et al., 2016; MQA, 2013; Ramly, 2003; RISM, 2017).

2.3 Competencies for Building Surveyor Professional

Collectively, Boyatzis (1982) highlighted that effective action or maximum performance is achieved when a person's capability is consistent with their job and the role requirements, as well as the organisation's environment. It is important to acknowledge the specific competencies set required within the BS profession. Competency is the critical element in the leadership skills approach, as it connects to individual attributes, career experience and environmental influences (Rowe & Guerrero, 2013). Generally, competency is linked to individual behaviour and job performance, which has also been defined as a capability or ability (Boyatzis, 2008; Mahmood et al., 2006). Other authors refer to competency as the individual's ability to execute roles within their working activities (Holt & Perry, 2011).

Another relevant definition that has been widely accepted by researchers is that competencies refer to an individual's underlying characteristics related to criterion-referenced effective or superior performance in a job or situation, as described by Spencer and Spencer (1993). These underlying characteristics consist of knowledge and skills, as well as self-concepts, traits and motives (Shermon, 2004; Spencer & Spencer, 1993). Shermon (2004) elaborated on this, stating that competencies are a combination of knowledge, skills, abilities, and personal attributes, which collectively contribute to the performance of the individual and the profession. Despite these various definitions, most researchers refer to competency as competence (Sanghi, 2004), and the terms are used synonymously with the ability, competence, knowledge, skills, attitudes, capabilities, and strengths of employees (Gupta, 2011). Collectively, the term competency has been defined differently, depending on an organisation's purpose and the business context.

By integrating the various definitions, professional competence can be measured by the individual ability, knowledge, skills, and attitudes that are essential for a building surveyor in performing their professional role in each project. Therefore, in line with the identified definition, this paper seeks to redefine a set of building surveyor professional skills, comprising personal ability, knowledge, skills, and attitudes, which will help individuals to perform their professional roles and deliver services to high ethical standards. Since few studies have discussed the niche competencies skillset for building surveyors in Malaysian practice and given the absence of a Building Surveying Act which can be used as a reference, the identified competencies skillset is based on information (Figure 2) obtained from local and international professional bodies, including the RISM, the PWD, the RICS, the AIBS and the HKIS.

More specifically, two local institutions - the Building Surveying Division and the RISM - have proposed a competency standard to define the required abilities of surveying professionals in Malaysia. The aim is for them to apply their knowledge, skills, attributes, and judgement in their work, according to various competency benchmarks. The suggested documentation highlights two categories of competency, namely core competency and optional competency. Meanwhile, the PWD developed the Competency Model and Dictionary in 2012 with the aim of measuring and guiding PWD employees' performance levels and career growth (PWD, 2017).

Furthermore, the RICS highlighted that to become competent building surveyors and practise as professional building surveyors, candidates must have the skills or ability to perform a variety of tasks or functions, while certain essential skills and the highest levels of integrity are also required (RICS, 2018). The APC document contains three distinct categories - mandatory, core and optional competencies; here, core and optional competencies refer to technical competencies. The competencies in the APC document are divided into three levels of attainment. Specifically, knowledge and understanding are categorised as Level 1; Level 2 covers the application of knowledge and the understanding of an individual; Level 3 refers to the reasoned advice and depth of individual technical knowledge.

Using the same approach detailed in the APC document produced by the RICS, the AIBS also attempted to develop building surveying competency standards, as outlined in the Continuous Professional Development Program document (see Australian Institute of Building Surveyors (AIBS)). These competency standards provide an industry benchmark for training and assessment by specifying the scope of knowledge and skills, as well as the particular roles required in the industry in Australia. The competency elements in this document are packaged into three levels of accreditation, namely Building Surveyor Level 1 (Degree in Building Surveying), Building Surveyor Level Limited (Advanced Diploma in Building Surveying), and Building Surveyor Level 3 (VET Skillset for Building Surveying). Meanwhile, the HKIS has also attempted to develop roles and guidelines to assess the professional competence of BS practitioners (HKIS, 2019). These APC or document standards can be used as an assurance that practical training and assessments are used to foster surveying practices. This would ensure that prospective candidates intending to become qualified building surveyors can deliver high-quality services to clients.

PWD (2017)

Technical (Core) Competencies

- Building Inventory
- Building Surveying
- Building Maintenance Management

Technical Competencies (Generic) for All Disciplines

- Project Management Methodologist
- Project Management Best Practices
- Site Supervision and Coordination
- Total Asset Management
- Infrastructure Facilities Management
- Enterprise System Management
- Human Resource Strategic Planning
- Organisational Development
- ICT Strategic Planning
- Public Relations
- Re-engineering & Mapping
- SKALA Management and Administration
- Workforce Learning and Competencies Management
- Research Methodology
- Specialisation/Complex Project Methodology
- Contract Management
- Value Management
- Sustainable Development

Support Competencies (Behavioural, Functional, Generic, ICT and Language)

- Achievement Orientation
- Adaptive Thinking
- Desire for Knowledge
- Holding People Accountable
- Impact and Influence
- Professional Mastery
- Visionary Leadership
- Advisory and Consultation
- Crisis Management Resolution
- Financial Management
- Quality Management
- Communication
- Planning and Organisation
- People Management
- Policies and Procedures
- Customer Service
- Change Management
- Strategic Thinking
- System Thinking
- Stakeholder Engagement
- Electronic Government Applications
- SKALA
- English Language

RICS (2018)

Core Competencies

- Building Pathology
- Construction Technology and Environmental Services
- Contract Administration
- Design and Specification
- Inspection
- Legal/Regulatory Compliance
- Fire Safety

Mandatory Competencies

- Ethics, Rules of Conduct and Professionalism
- Client Care
- Communication and Negotiation
- Health and Safety
- Accounting Principles and Procedures
- Business Planning
- Conflict Avoidance, Management, And Dispute Resolution Procedures
- Data Management
- Diversity, Inclusion and Teamworking
- Inclusive Environments
- Sustainability

Optional Competencies

- BIM Management
- Commercial Management
- Client Care (To Level 3), Or Conflict Avoidance, Management, And Disputes Resolution Procedures or Health and Safety (To Level 3) Or Inclusive Environments or Sustainability
- Conservation and Restoration
- Contract Practice
- Design Economics and Cost Planning
- Development/Project Briefs
- Fire Safety
- Housing Maintenance, Repair, And Improvements or Maintenance Management
- Insurance
- Landlord and Tenant
- Measurement
- Procurement and Tendering
- Project Finance
- Quantification and Costing
- Risk Management
- Works Progress and Quality Management

RISM (2021)

Core Competencies

- Building Inspection (Condition and Dilapidation)
- Building Control and Compliance
- Space Planning and Measurement
- Assets Inventory
- Building Maintenance and Refurbishment
- Building Conservation and Pathology
- Building Safety Audit

Optional Competency

- Building Re-Measurement
- Authority Liaison Management
- Handling Over Management
- Technical Due Diligence
- Building and Construction Management
- Dispute Resolution and Conflict Avoidance
- Digital Construction
- Building Performance
- Post Occupancy Evaluation
- Sustainability and Green Building

AIBS

Building Surveyor Level 1 Competencies

- Construction Practices and Principles
- Law and Statutes
- Codes and Standards
- Structural Engineering Principles
- Building Related Science
- Performance-Based Building Regulatory Systems
- Risk Assessment and Risk Management Principles
- Professional Ethics
- Management Practice
- Communication Practices
- Problem Solving Skills
- Building Services
- Fire Safety Engineering Principles
- Building Management
- Development Concepts
- Construction Economics
- Ability to Conduct Independent Research
- Experiential Learning

HKIS (2019)

Core Competencies

- Building Elements and Components
- Building Design, Structure and Construction Technology
- Building Services
- Building Health
- Building Safety
- Building Efficiency and Sustainability
- Building Development
- Building Project Management
- Building Pathology
- Building Maintenance Management
- Building Alterations and Additions
- Building Property and Facility Management
- Building Dispute Resolution

Optional Competencies

- Building Regulatory Control Regimes
- Building Behaviour and Performance
- Building Development Economics
- Able to Accept and Adopt Technological Innovations and Advancements
- Able to Maintain a High Level of Professional Ethics
- Able to Uphold the Professional Integrity of Building Surveyors and the HKIS

Figure 2 Identified competencies skillset for building surveyors

3.0 METHODOLOGY

This research is qualitative, as it adopted the document analysis method to conduct a literature review of the existing documents relating to the guidelines, standards and policies produced by the local and international professional bodies that govern the BS profession, including the RISM, the PWD, the RICS, the AIBS and the HKIS. The detailed methodological approach applied during this research is shown in Figure 3. As shown in this diagram, the research question was devised before the research objective was established. The research question was based on the gaps identified from the literature search, which covered a broad perspective of research in the built environment and construction fields. Next, to achieve the research objective, the literature review and document analysis were selected as the instrument techniques or procedures to be employed in collecting and analysing the data linked to the research question. The research instrument for data collection in this study included a literature review and document analysis; these texts were then evaluated using content analysis.

Correspondingly, literature exploration using the content analysis technique and a schedule matrix table can provide data on the context within which research fields operate, as well as provide background information and historical insights. Generally, document analysis is a systematic procedure used for reviewing documents, whereby data were examined and interpreted to elicit meaning and develop empirical knowledge (Bowen, 2009). This differs from a literature review, which only reviews past research without reporting on the original research texts (Adams & Lawrence, 2019). To conduct content analysis, the researcher had to determine the object of the search (by devising the research question), then organise the frequency and amount of occurrences within each document. Bowen (2009) explained that content analysis can be conducted by organising information into categories related to the central research questions. Therefore, the document exploration and content analysis tasks were performed manually to gather data on the main elements of building surveyor competencies.

Furthermore, the sampling approach for this qualitative research employed a non-probability sampling design using purposive sampling, based on criterion sampling and the snowball sampling technique. The predetermined criteria for criterion sampling were that a nominated competency document should represent the international and local building surveying industry bodies governing the building surveying profession. Meanwhile, for the snowballing approach, the reference list of the citations used in each paper was examined to identify any additional papers to refer to when conducting literature exploration. In terms of literature and document analysis sample size, the number of documents (the sample) to gather relied on each document's quality rather than its quantity (Bowen, 2009). It also depended on the accuracy of the subject interpretations and the data saturation point, since the researcher had to organise and elicit meaning from the data before drawing realistic conclusions (Bengtsson, 2016).

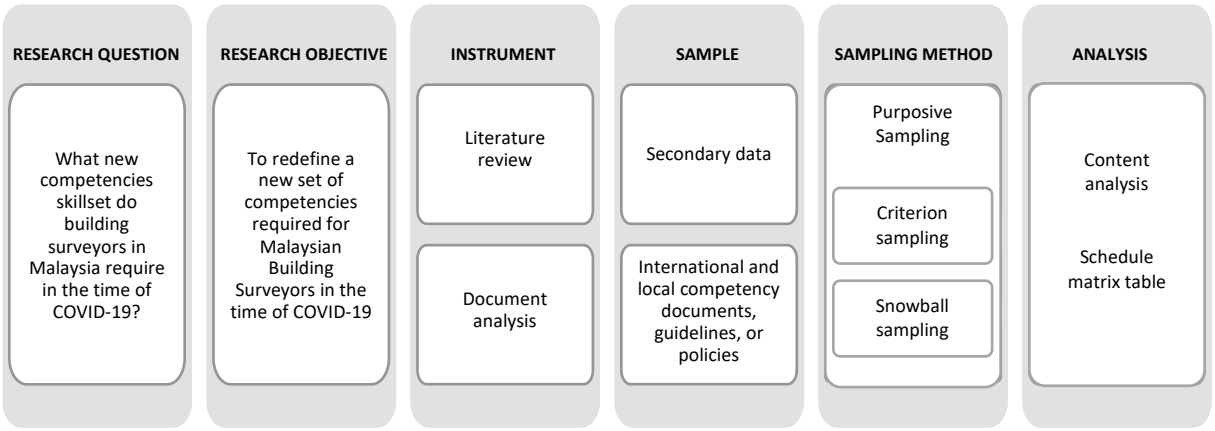

Figure 3 Summary of research techniques and strategies applied for this research

As shown in Figure 3, to interpret the nominated documents in this study, three basic strategies recommended by Creswell (1997) were utilised. These strategies include: 1) a general review of all the information, 2) reducing the data and information, and 3) counting the frequency of codes that appear in the database. The strategies process started with a general review of all the information, which involved screening the databases based on either the surface keywords or other reasonable combinations of the key terms related to the competence attributes of building surveyors (e.g., competencies; ability; performance; skills; guidelines and policies; international and local building surveying organisations). The data and information were then displayed in a schedule matrix table, which involved scanning, identifying, comparing, and categorising the data. The table was used to identify pattern matching before proceeding with the second stage, data reduction. The function of a schedule matrix table is to facilitate the identification of pattern matching, the making of comparisons and the development of the data network.

The second strategy involved data filtering and reducing, thus highlighting the most significant data that would best contribute to the results. During this process, any redundant elements were either removed or combined through the creation of new constructs for fundamental competence. Lastly, the count frequency of codes was deployed to distinguish the codes with significant findings from those with low findings. The percentage agreement was applied when counting the frequency of codes. Percentage agreement measures of interobserver agreement or reliability are used to summarise the observer agreement from studies using interval recording, time-sampling and trail-scoring data collection procedures (Birkimer & Brown, 1979). Bowling (2009) suggested that the simplest way of calculating the

equivalence of the inter-rater agreement is to use percentages. Likewise, any item recognised by more than three organisations or institutions could be considered a core competency required for building surveyors practising in Malaysia. It was vital to redefine the competency elements from international and local perspectives to broaden the implications of the results with respect to global practitioners and the worldwide community.

4.0 RESULTS AND FINDINGS

General and technical competencies are integral to becoming a Registered Building Surveyor. The international and local bodies that govern the BS profession have issued competency standards or guidelines to define the abilities that surveying professionals need in order to apply the appropriate knowledge, skills, attributes and judgement in their job; thus, there are various competency benchmarks.

The schedule matrix and analysis of the collected competencies produced by the local and international professional BS governing bodies are shown in Table 1. In regard to the document review findings, the initial number of competencies was 111 items. However, after performing document analysis and content analysis, only 68 out of the 111 items were maintained. The percentage agreement analysis (counting the frequency of codes) uncovered a total of 14 fundamental competencies (highlighted in grey), which were identified as the new competencies skillset required for Malaysian building surveyors.

To reiterate, when counting the frequency of codes, percentage agreement, which is commonly used in measures of interobserver agreement or reliability, was employed to determine which equivalence competency elements were the most highly required for building surveyors, as stated in the nominated documents. There are three principal types of reliability: stability, equivalence and internal consistency (Oluwatayo, 2012). Hence, when counting the percentage agreement and measuring the equivalence of the reliability of the collected data, either alternate form (or parallel) or inter-rater form can be used as measurements (Oluwatayo, 2012). To correspond with the purpose of this study, inter-rater reliability using a simple level of calculation (such as percentage) was applied, as suggested by Bowling (2009).

In terms of the reliability principle formula, any item reaching 0.80 (80% correct observation and 20% error) or higher was accepted as it would produce comparable responses (Bowling, 2009). Similarly, as suggested by Oluwatayo (2012), the focus of inter-rater reliability is the extent to which it is agreed that the results obtained by two or more raters are similar or the same. Therefore, based on the inter-rater principle, it was deemed appropriate to consider any constructs or codes that had been recognised by more than three professional organisations as the major competencies for building surveyors. In this approach, any item obtaining a minimum score of 60 per cent as the degree of agreement was relevant and was accepted. Formula (1) was used to calculate the percentage of agreement, as suggested by Araujo and Born (1985).

$$\frac{\text{agreements}}{(\text{agreements} + \text{disagreements})} \quad X \quad 100\% = P\% \qquad (1)$$

Based on the findings, the leading competency groups - Building Control and Compliance, and Building Maintenance Management - each had a total agreement of 100%. This suggests that different professional bodies acknowledge that building surveyors must possess building control and building maintenance knowledge and skills to thrive in the global and local labour markets. Both these competencies complement the claims by the RISM and the MQA. The RISM stated that one primary role of building surveyors involves the maintenance and repair of buildings, while the MQA agreed that the main scope of work offered by Malaysian building surveyors is building control and compliance.

The second most important competence was Dispute Resolution and Conflict Avoidance, with a total agreement of 80%. Meanwhile, the remaining 11 competency elements were as follows (1) Building Inspection, (2) Space Planning and Measurement, (3) Assets Inventory/Building Inventory, (4) Building Safety Audit, (5) Building Pathology, (6) Construction Technology and Environmental Services, (7) Fire Safety/Fire Safety Engineering Principles, (8) Development Concepts/Design Economics and Cost Planning, (9) Sustainability and Green Building, (10) Conservation and Restoration and (11) Ethics, Rules of Conduct and Professionalism; each of these produced a total agreement of 60%. Interestingly, it is fundamental that building surveyors clearly utilise these key competencies when practising professional services (as shown in Table 1) as they serve to outline the niche roles that can be performed in local and international practice, especially when addressing unexpected situations and COVID-19 outbreaks.

Table 1 Schedule matrix and data analysis for identified competencies

Competencies for Building Surveyor Profession	Professional Bodies					Percentage Agreement
	RISM	PWD	RICS	AIBS	HKIS	
1. Building inspection (condition and dilapidation)	x	x	x			60%
2. Building control and compliance/legal/regulatory compliance/ building alterations and additions	x	x	x	x	x	100%
3. Space planning and measurement	x	x	x			60%
4. Assets inventory/building Inventory/building property and facility management	x	x			x	60%
5. Building maintenance and refurbishment/ building maintenance management	x	x	x	x	x	100%
6. Building safety audit	x			x	x	60%
7. Building pathology	x		x		x	60%
8. Construction technology and environmental services			x	x	x	60%
9. Contract administration/building project management			x		x	40%
10. Design and specification			x		x	40%
11. Fire safety/fire safety engineering principles			x	x	x	60%
12. Construction practices and principles				x		20%
13. Structural engineering principles/building elements and components				x	x	40%
14. Performance-based building regulatory systems				x		20%
15. Building services				x	x	40%
16. Development concepts/design economics and cost planning			x	x	x	60%
17. Construction economics				x		20%
18. Building efficiency and sustainability					x	20%
19. Building re-measurement	x					20%
20. Authority liaison management	x				x	40%
21. Handling over management	x					20%
22. Technical due diligence	x					20%
23. Building and construction management	x		x			40%
24. Dispute resolution and conflict avoidance	x	x	x		x	80%
25. Digital construction	x				x	40%
26. Building performance	x				x	40%
27. Post occupancy evaluation/building health	x				x	40%
28. Sustainability and green building	x		x	x		60%
29. BIM management			x			20%
30. Commercial management			x			20%
31. Client care			x			20%
32. Conservation and restoration	x	x	x			60%
33. Contract practice			x			20%
34. Housing maintenance, repair, and improvements			x			20%
35. Insurance			x			20%
36. Landlord and tenant			x			20%
37. Procurement and tendering			x			20%
38. Project finance			x			20%
39. Quantification and costing			x			20%
40. Risk management			x	x		40%
41. Able to uphold the professional integrity of building surveyors and the HKIS					x	20%
42. Achievement orientation		x				20%
43. Adaptive thinking		x				20%

44.	**Desire for knowledge**		x			20%
45.	**Holding people accountable**		x			20%
46.	**Impact and influence**		x			20%
47.	**Visionary leadership**		x			20%
48.	**Advisory and consultation**		x			20%
49.	**Financial management**		x	x		40%
50.	**Quality management**		x			20%
51.	**Planning and organisation**		x			20%
52.	**People management**		x			20%
53.	**Policies and procedures**		x			20%
54.	**Customer service**		x			20%
55.	**Change management**		x			20%
56.	**Strategic thinking**		x			20%
57.	**System thinking**		x			20%
58.	**Stakeholder engagement**		x			20%
59.	**Electronic government applications**		x			20%
60.	**English language**		x			20%
61.	**Ethics, rules of conduct and professionalism**		x	x		x 60%
62.	**Client care**			x		20%
63.	**Communication and negotiation**		x	x		40%
64.	**Health and safety**			x		20%
65.	**Business planning**			x		20%
66.	**Data management**			x		20%
67.	**Diversity, inclusion and teamwork**			x		20%
68.	**Inclusive environments**			x		20%

5.0 DISCUSSION

Significantly, the findings indicate that even though countries may have different variables that must be adjusted to the current roles and services practised by building surveyors, several competencies were consistently found throughout the professional bodies' documentation. The differences and similarities between the competencies required for building surveying professionals, as outlined by the local and international professional bodies, are presented in Table 1. Significantly, the territorial impact of the COVID-19 crisis on building surveyors can be measured in terms of the new methods of working, the rapidly changing technologies and the highly competitive employment situation. The worsening COVID-19 crisis led to the switch from on-site working environments to online or work-from-home approaches within the construction industry worldwide. This forced individuals and employees to change their working approach. Due to the initial fears that the pressure would be excessive, it was necessary to discover new ways of working to counter the long-term challenges of the pandemic crisis. In fact, regardless of the pandemic, changing technologies, new ways of working and varying industry demands will continue to affect and alter the skills that employees require to perform their roles.

Therefore, to emerge stronger after the pandemic crisis, building surveying companies, communities and organisations should start reskilling their human capital to build resilient workforces. It is suggested that workers in all industries must determine the best ways to adapt to the rapidly changing conditions and industry demands. Moreover, higher learning institutions must also learn how to match their workers (graduates) or products to these new roles, activities and demands. This learning process will merge with the challenges caused by the COVID-19 crisis. The current findings extend the existing research by defining a new set of competencies for building surveyor professionals, which highlights the competency elements found in the local and international building surveying documentations. The study successfully revealed a total of 14 fundamental competencies, which were identified as the new competencies skillset required for Malaysian building surveyors. The findings reveal that Building Control and Compliance, Building Maintenance Management, Conflict Avoidance and another eleven listed competencies formed a group of core competencies that would enable Malaysian building surveyors to perform building surveying services locally and internationally.

Redefining the competencies required for Malaysian building surveyors from the international and local perspectives broadens the implications of the results by incorporating both local and global practitioners. In a globalised competitive environment and due to the changing global business environment and new technologies, it is difficult to work in isolation and ignore international impacts. Therefore, the competencies identified in this study represent the growing efforts to gain new insights into the fundamental skillset that building surveyor professionals need in order to address the post-COVID-19 challenges and any unidentified impacts. Adaptations are necessary to

continue updating BS professionals' skillsets while minimising the effects of the COVID-19 pandemic on the supply of, and demand for, BS services.

6.0 CONCLUSION

This paper redefines the competencies that building surveyors should possess in order to prepare them for the post-pandemic era and enable them to respond to the COVID-19 crisis. Subsequently, the local and global integration of the BS profession into construction and built environment industry can be achieved with the enhancement of building surveyor competencies in accordance with the roles and service demands. Technical professionals in the construction industry are encouraged to gain certification to demonstrate their competency in their chosen profession. Thus, this study should benefit employees' career development by providing the fundamental competencies as a reference that they can use to demonstrate their abilities to prospective employers, according to demand. Correspondingly, the findings amplify the call for universities, the government, and private organisations to embark on a strategic enhancement of the building surveying position so that the profession achieves local and global recognition. Significantly, the findings also indicate that universities should embark on a strategic educational approach by redefining their academic course content to complement the competencies demanded and encourage a paradigm shift in BS practice and education. This would be especially relevant in the current unprecedented context of the COVID-19 pandemic, which has seriously affected the Malaysian labour market and ways of working. Also, to further improve building surveying higher education courses in Malaysia, it is important that government organisations such as the MQA revise the existing Building Surveying Programme Standards, which were developed at the end of 2012. These Standards need to be revised periodically. A revised version is necessary to ensure that the curriculum is designed in parallel with the current competencies needed by the industry and which are exclusive to the new working environment. Correspondingly, such revisions should also outline that the RISM needs to develop an APC document equivalent to those published by the other international organisations that govern the building surveying profession. This would be a significant document to which prospective and current building surveyors could refer in order to manage their career development. The document would also become a benchmark for improved transparency among future professional building surveyors wanting to register with the RISM. Through such efforts, it would become a useful marketing tool, enabling the public to better understand the role of building surveyors and promote the professional services they offer in Malaysia and other countries. In summary, further research could investigate the validity of these documentation findings by conducting content validity with experts in the field. This would verify the identified competency elements and capture knowledge related to this particular form of expertise.

Abbreviations and Acronyms

AIBS: Australian Institute of Building Surveyors; APC: assessment of professional competence; BS: building surveying; CABE: Chartered Association of Building Engineers; COVID-19: coronavirus disease; CPD: Continuing Professional Development; HKIS: Hong Kong Institute of Surveyors; PWD: Public Works Department; MCO: movement control order; MQA: Malaysian Qualifications Agency; MyRBS: Malaysian Association of Registered Building Surveyor; RBS: Registered Building Surveyor; RICS: Royal Institution of Chartered Surveyors; RISM: Royal Institution of Surveyors Malaysia; SOP: standard operating procedure; UK: the United Kingdom.

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