Samarathunga, D., Gamage, I. and Lingasabesan, V., 2023. Outsourcing consultant quantity surveying activities during the post-pandemic era. In: Sandanayake, Y.G., Waidyasekara, K.G.A.S., Ramachandra, T. and Ranadewa, K.A.T.O. (eds). *Proceedings of the 11th World Construction Symposium*, 21-22 July 2023, Sri Lanka. [Online]. pp. 847-859. DOI: https://doi.org/10.31705/WCS.2023.68. Available from: https://ciobwcs.com/papers/

OUTSOURCING CONSULTANT QUANTITY SURVEYING ACTIVITIES DURING THE POST-PANDEMIC ERA

Dilrangi Samarathunga[1], Iresha Gamage[2] and Vithusha Lingasabesan[3]

ABSTRACT

The COVID-19 pandemic has left a significant impact on the survival of the global construction industry and its stakeholders including quantity surveyors. Outsourcing is recognised as a business strategy which can be tried for consultants quantity surveying organisations for surviving in the construction industry during a pandemic period. Due to the absence of previous studies that evaluated the effectiveness of outsourcing consultants quantity surveying activities in the Sri Lankan context following the pandemic, this study intends to fill the aforementioned research gap. As a result, the research was aimed at examining the feasibility of outsourcing key consultants' quantity surveying activities in the Sri Lankan context following the pandemic. A thorough literature review was carried out in order to investigate the possibility of outsourcing key consultant quantity surveying activities in Sri Lanka during the post-pandemic era. To achieve the goal of this research, a mixed-method approach with structured expert interviews and a questionnaire survey was used. Thematic analysis using QSR Nvivo version 12 software and the RII method was used to analyse the data. The most suitable activities for outsourcing in Sri Lanka during the post-pandemic era were identified as BIM model creation, BOQ preparation, and BOQ verification. The study's findings revealed the possibility of outsourcing the quantity surveying activities of consultants in Sri Lanka during the post-pandemic era. Furthermore, the findings of this study can be used to identify prevalent motivating factors for introducing or improving the outsourcing concept as well as to put into practice within consultant quantity surveying organisations.

Keywords: *Consultant Quantity Surveying Activities; Outsourcing; Post-Pandemic Era.*

1. INTRODUCTION

A high degree of risk is common in the construction industry due to its nature, work processes, construction environment and organisational culture (Goh & Abdul-Rahman, 2013). Furthermore, the construction industry is facing different types of risks such as technical, construction, physical, organisational, financial, environmental and socio-political (Mhetre et al., 2016). The COVID-19 pandemic, which just hit the world, has

[1] Graduate, Department of Building Economics, University of Moratuwa, Sri Lanka, madushikadilrangi1997@gmail.com
[2] Lecturer, Department of Building Economics, University of Moratuwa, Sri Lanka, iggamageiresha@gmail.com
[3] Lecturer, Department of Building Economics, University of Moratuwa, Sri Lanka, hivithusha@gmail.com

altered every aspect of the regular system and it can be identified as a risk to construction projects (Ogunnusi et al., 2020). Alsharef et al. (2021) mentioned that the construction industry was also impacted as a result of the high economic impact generated through COVID–19 pandemic. Consequently, quantity surveyors too faced some negative impacts due to COVID-19 (Ogunnusi et al., 2021).

Several surviving strategies used by the firms in the post-pandemic situation can be identified as outsourcing, improved service delivery, reduction of company overheads and workforce training (Jayalath & Gamage, 2021). Outsourcing has emerged as a strategic decision in the industry when achieving the required quality and reducing the cost and time duration of the project in the post-pandemic period (Erickson & Norlander, 2021). Furthermore, it is supported by Aburumman (2020), who elaborated that outsourcing is the optimal solution for recovering and surviving. Though the term "outsourcing" is the most famous concept in the industries, it is not much popular in the construction industry in past (Ranasinghe et al., 2019).

Being an important stakeholder in the construction industry by managing the project's cost components, quantity surveying firms are facing the same issues as other industries as a result of the pandemic (Badu & Amoah, 2004). Most of the quantity surveying jobs have been outsourced due to the common advantages identified such as time and cost-savings (Beaumont & Sohal, 2004). Moreover, according to researchers, outsourcing has been identified as the third-best survival strategy after the COVID-19 pandemic in quantity surveying firms in the Gulf region (Jayalath & Gamage, 2021).

Though there are studies on the effectiveness of outsourcing in other industries such as information technology, no previous studies evaluated the effectiveness of outsourcing consultants quantity surveying activities in the Sri Lankan context during the post-pandemic era as the industry recovers from the critical period. Thus, this study intended to fill the said research gap in the industry.

Accordingly, the aim was set as to investigate the possibility of outsourcing key consultants quantity surveying activities in Sri Lanka during the post-pandemic era. Reviewing the concept of outsourcing related to the construction industry, identifying the key drivers for outsourcing consultant quantity surveying activities during the post-pandemic era and investigating the activities that can be effectively outsourced within the context of consultancy quantity surveying firms in Sri Lanka during the post-pandemic era were the three objectives that formed to achieve the research aim.

2. LITERATURE REVIEW

2.1 ROLE OF QUANTITY SURVEYORS IN THE CONSTRUCTION INDUSTRY

Olanrewaju (2016) mentioned that a construction project is a team and several professionals are involved with a single project such as the client, construction professionals, design professionals and operational team. Olanrewaju (2016) further identified those professionals as key stakeholders in the construction industry.

The quantity surveyor plays a vital role in construction projects providing value for money (Olanrewaju, 2016). Providing preliminary cost advice, preliminary cost planning, risk analysing services, provide value engineering, value planning and value management services were revealed as quantity surveying activities by Cartlidge (2018). In addition to that, the role of quantity surveyors is involved in the whole life cycle of the project in the

stages of design, construction, maintenance, refurbishment, extension and demolition (Olanrewaju, 2016).

2.2 SURVIVAL STRATEGIES DURING THE POST-PANDEMIC ERA

This pandemic impacted many industries in Sri Lanka, including the construction industry. Pathirana (2020) stated that the construction industry in Sri Lanka was completely shut down after March 23rd, 2020, due to health regulations to control the situation COVID-19 has a significant impact on the construction industry, including material damage, high rental costs for offices spaces, idle plant and machinery, the risk of bankruptcy, the risk of contract termination, and the risk of employee termination (Vithana et al., 2020).

Despite the fact that all industries have been affected by the Covid-19 pandemic, they must find a way to continue operations while minimising the impact without going bankrupt (Gamil & Alhagar, 2020). In line with that, Haynes et al. (2019) mentioned that innovations and inventions have a greater contribution to surviving during a crisis period. According to Alves et al. (2020), entering into new markets, learning new things and product diversification can be identified as business survival strategies in a crisis period.

Among the limited literature on business survival during the pandemic era (Abubakar, 2020), more researchers are concerned about survival through innovation and inventions (Jayalath & Gamage, 2021). In addition to that, it has recommended some flexible human resource strategies (Abed, 2022). Besides, Olufemi (2020) has highlighted that government can help industries to survive this situation by easing credit terms and reducing interest rates and tax payments.

New infrastructure investment and other economic recovery stimulus policies, internet and instant communication technology eased communication barriers caused by the epidemic, government tax relief and subsidies from the government were identified as strategies to mitigate the impact of COVID-19 on the construction industry (Wang et al., 2022). Construction companies also moved to remote work policies for professional activities through digital platforms such as Zoom (Butterick & Charlwood, 2021). Furthermore, Jayalath and Gamage (2021) stated that those methods are more effective from the consultant perspective which is done based on computer aid software and the work-from-home concept.

According to Jayalath and Gamage (2021), the major survival strategies that are practised in quantity surveying forms within the gulf region are working from home, decentralised decision-making, improving networking, retaining existing staff and outsourcing. In addition, according to Aburumman (2020), the optimal solution for survival has been identified as outsourcing.

Table 1 presents the summary of survival strategies that can be used during the post-pandemic era.

Table 1: Summary of survival strategies for the post-pandemic era

Rank	Strategy	References
1.	Work from home	(2)
2.	Decentralised decision making	(2)
3.	Improving networking	(2), (3)
4.	Retaining existing staff	(2),

Rank	Strategy	References
5.	Outsourcing	(2), (1)
6.	Reducing the costs of transactions	(2), (3)
7.	Minimising overhead cost	(2), (3)
8.	Using virtual technology	(2)
9.	Improving service delivery	(2)
10.	Improving organisational structure	(2)
11.	Using social media platforms	(2)
12.	Use innovative ideas	(2)
13.	Going after work in new areas	(2)
14.	Obtaining loan and tax concessions	(2)
15.	Provide training to the workforce	(2)
16.	Diversifying the competing areas	(2)
17.	Mergers, acquisitions, and joint ventures	(2)
18.	Staff layoff	(2), (3)
19.	Fewer service charges	(2), (3)
20.	Provide discounts to customers	(2), (3)
21.	Effective knowledge management	(2)
22.	Family involvement	(2)
23.	Coopetition	(2)
24.	Evaluation and accounting of the existing projects	(3)
25.	Changing distribution channels	(3)
26.	Stop hiring temporary employees,	(3)
27.	Reduce bonuses and rewards to existing employees	(3)

(1)- (Aburumman, 2020)/ (2)- (Jayalath & Gamage, 2021)/ (3)- (Namarathna & Gunarathna, 2022)

2.3 CONCEPT OF OUTSOURCING

The concept of outsourcing was born in 1950 in America (Verroiopoulos & Sfakianaki , 2015) but it was formally initiated as a strategy in 1989 (Kalinzi, 2016). Outsourcing is distinguished from contracting and subcontracting because outsourcing refers to the long-term relationship including the high degree of sharing risk while contracting and subcontracting refer to providing a task job on a job basis to an outside party (Baatartogtokh et al., 2018).

According to Oshri et al. (2015), the main three types of outsourcing methods can be identified as total outsourcing, selective outsourcing and transitional outsourcing. Furthermore, outsourcing can be divided into two major types: temporary and permanent. Based on requirements temporary outsourcing is used to fulfil the short-term requirement of staff while permanent outsourcing is used to fulfil the long-term strategies of the organisation (Ketler & Willems, 1999). In addition to that, it can be simply categorised as domestic and international outsourcing based on the method of work carried out whether it is locally or internationally (Chongvilaivan et al., 2009).

2.4 APPLICABILITY OF OUTSOURCING TO THE CONSTRUCTION INDUSTRY

Outsourcing become the most common practice in many industries in the past decade (Sattineni, 2008). Sattineni (2008) further stated that the construction industry involves with this outsourcing concept for the past ten years. Nowadays, outsourcing is an efficient and economical method for the complex nature of construction projects (Arditi & Chotibhongs, 2005). However, it can lead to additional costs, delays, less quality and project failure with inappropriate methods (Lee et al., 2009).

When considering the profession of a quantity surveyor, the quantity surveyor works under both client and the contractor in providing expert advice (Badu & Amoah, 2004). The consultant group has more options for quantity surveying activities such as in-housing, outsourcing, out-tasking and partnerships (Beaumont & Sohal, 2004). Moreover, Assaf et al. (2011) revealed that outsourcing is the best option for non-core business activities in consultant quantity surveying activities.

2.5 KEY DRIVERS TO IMPLEMENT OUTSOURCING IN THE CONSTRUCTION INDUSTRY

The outsourcing process should be well planned because it is a risky decision (Blumberg, 1998). According to Hassananin et al. (2011), it is important to identify the key drivers affecting outsourcing decisions. According to Pratap (2014), drivers for outsourcing are access to innovation, cost benefits and expertise capabilities. Assaf et al. (2011) further categorised the drivers for outsourcing decisions into six categories as strategic, economic, management, technological, quality and functional factors.

Kremic et al. (2006) highlighted that access to world-class capabilities, risk sharing with contractors and freeing resources for core activities are the strategic factors to utilise outsourcing. Saving the overall cost is the key economic driver behind the outsourcing decision because that is the major goal of the organization (Assaf et al., 2011; Kremic et al., 2006). According to Cronin et al. (2004), Djavanshir (2005) and Assaf et al. (2011), the overall cost can be reduced by reducing the labour cost, material cost and management cost. Kremic et al. (2006) mentioned that the cost of in-house services is higher than outsourcing because outsourcing is not comprised of fixed costs. Assaf et al. (2011) and Jain and Natarajan (2011) reported that saving management time is a key management factor in outsourcing. Furthermore, Assaf et al. (2011) revealed that service quality is the key quality driver for outsourcing decisions where the lack of equipment, tools and technology to carry out the tasks is the key technological driver in moving towards outsourcing.

2.6 CONSULTANT QUANTITY SURVEYING ACTIVITIES THAT CAN BE OUTSOURCED

As per Chong et al. (2012), the majority of traditional and non-traditional quantity surveying activities can be outsourced. Furthermore, Abdul-Aziz and Ali (2004) mentioned that frequently outsourced consultant quantity surveying activities include the preparation of preliminary cost plans, preparation of BOQ, preparation of tender estimate, tender evaluation, preparation of contract documents, providing cost advice, providing advice on contracts, preparation of work progress evaluation, evaluating work variation and completing final accounts.

Ranasinghe et al. (2019) identified nine (9) key quantity surveying activities that can be outsourced as preparation of BOQ, preparation of cost plans, preparation of tender documents, preparation of contract documents, preparation of interim payment certificate (IPC), preparation of final accounts, providing advice on alternative dispute resolution (ADR) methods, value engineering services, claims management, providing tax advice and insurance, advising on environmental and safety aspects, preparation of maintenance user manuals. When outsourcing the dispute resolution process, according to the nature of the dispute the relevant specialists can be used to improve the quality of the ADR process. Organisations can outsource the preparation of BOQ as a profitable method as

the key quantity surveying activity because the pre-contract documents such as the standard method of measurement, method statement, type of contract, tender drawings and specifications are readily available (Ranasinghe et al., 2019). Moreover, there were very few studies to identify the consultant quantity surveying activities that can be outsourced. Hence, it is required to identify the activities to fulfil the research gap.

3. METHODOLOGY

A mixed approach was selected to carry out this study while using a qualitative approach to validate the literature findings in the Sri Lankan context followed by a quantitative approach to generate the final outcome. Expert interviews were conducted with industry experts in order to do the affirmation of literature findings in the post-pandemic era in Sri Lanka.

Non-random sampling is better suited to a qualitative approach with a pre-selected list of respondents from the research area (Brahme et al., 2006). Quantity surveyors, project managers, and CEOs of organisations involved in outsourcing activities from a consultant perspective were invited to participate in the interviews as experts in this study. The interviews were conducted with ten (10) experts. Thematic analysis was used to analyse the data collected through expert interviews using the NVivo 12 software. Details of interviewees involved in expert interviews are given in table 2.

Table 2: Details of interviewees for expert interviews

Respondent Coding	Profession	Designation	Years of experience
R01	Chartered QS	Managing Director	35 years
R02	Chartered QS	Director	18 years
R03	Chartered QS.	Director	30 years
R04	Chartered QS	Director	19 years
R05	Chartered QS.	Director	05 years
R06	Chartered QS	Operation Director	26 years
R07	Chartered QS	Commercial Manager	15 years
R08	Chartered QS	Director	22 years
R09	Chartered QS	Managing Director	20 years
R10	Chartered QS.	Quantity Surveyor	7 years

Following the expert interviews, a questionnaire survey was used to identify the most effective quantity surveying activities that could be outsourced in the post-pandemic Sri Lankan context. Given that a certain number of respondents is required for a questionnaire survey, the purposive sampling method was chosen when the population and the objective of the research are considered. This method is also a nonprobability sampling method, and experts such as quantity surveyors and CEOs with experience in construction outsourcing decisions were chosen to collect data. Fifty (50) quantity surveying experts with construction industry experience in Sri Lanka were chosen to distribute the questionnaire, and thirty (30) respondents responded. Each activity was quantified on a 1-5 Likert scale based on its suitability for outsourcing. Finally, the relative importance of quantity surveying activities that can be outsourced was determined.

4. ANALYSIS AND RESEARCH FINDINGS

4.1 EXPERT INTERVIEWS

Fourteen (14) numbers of consultants' quantity surveying activities that can be outsourced during the post-pandemic era were identified through the literature review and those were customised to the Sri Lankan context during the expert interviews.

The customised list of consultants' quantity surveying activities that can be outsourced in the Sri Lankan context can be identified as follows. The new activities that are identified through the expert interviews are highlighted and the number of respondents who validated the activities is represented in the chart.

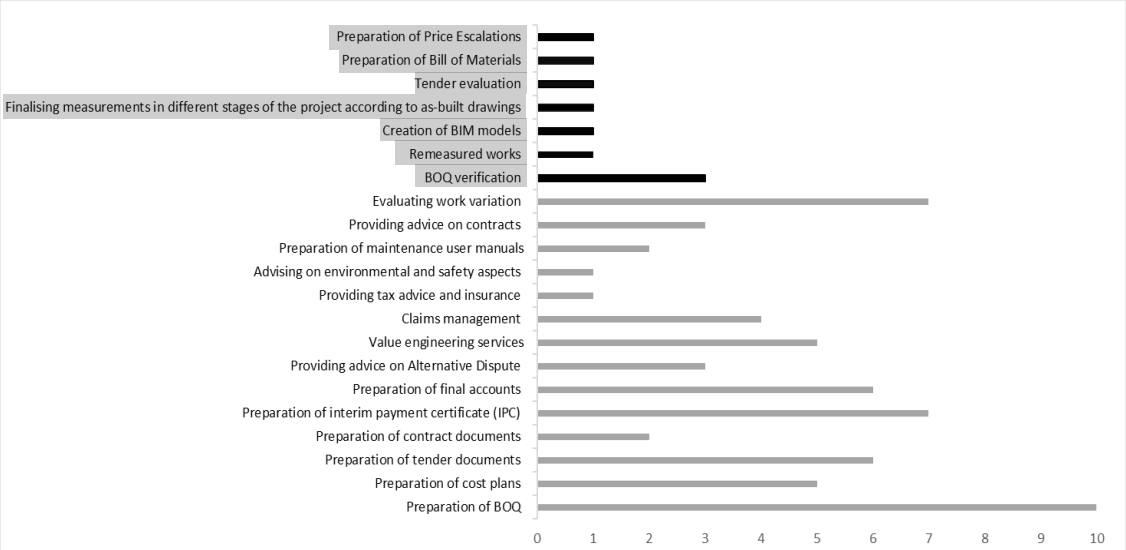

Figure 1: Consultant quantity surveying activities suitable for outsourcing

Most of the activities identified through the literature survey were validated by the respondents. In addition, a few new activities were introduced by the respondents such as BOQ verification, remeasured works, creation of BIM models, finalising measurements in different stages of the project according to the as-built drawings, tender evaluation, preparation of bills of materials and preparation of price escalations.

All the respondents have stated that the preparation of bills of quantities can be outsourced while R05 stated that the reason for outsourcing is *"limited time and resources available within the organisation"*. Evaluating work variation and preparation of cost plans were also validated by seven respondents out of ten as outsourcing activity while the R07 stated that *"the pricing part cannot be done through outsourcing, but the measurement part can be done"*.

R01, R05 R06 and R07 stated that the preparation of cost plans, preparation of tender documents, preparation of contract documents, preparation of IPC and preparation of final accounts cannot be fully outsourced and only the measurement part can be outsourced because those are confidential information and client is not willing to reveal those to an external party.

Though most of the respondents described that the value engineering can be outsourced, R01 did not agree with that opinion and elaborated the reason as *"value engineering is done in two stages (concept design stage and just before the tender documents are*

floated) and after the Issued for Construction (IFC) drawings are issued, value engineering is not done because it creates a huge impact to redesign, redo and come up with variations". R07 further confirmed the above statement by giving the reason as *"value engineering is a continuous and subjective process"*. Therefore, according to practical situations, it was difficult to outsource within Sri Lanka.

R01 further insisted that outsourcing tax advice and insurance is not a proper idea because "that task is related to auditors but not a responsibility of a quantity surveyor". According to R01's opinion "advising on environmental and safety aspects are not the responsibility of the quantity surveyor and the professionals in Green Building Council Sri Lanka can be used for this purpose". R01 further mentioned that "preparation of maintenance user manuals is the responsibility of the facilities manager". According to R05 opinion, claims management cannot be outsourced because "more details are required for this process".

The respondents believed that the consultant quantity surveying activities with the greatest potential for outsourcing were BOQ and tender document preparation. Further, the measurement part of the activities such as evaluating work variation, preparation of final accounts, preparation of cost plans, value engineering works, preparation of bills of materials and preparation of price escalations can be outsourced effectively in Sri Lanka during the post-pandemic era.

4.2 QUESTIONNAIRE SURVEY

In the second stage of data collection, a questionnaire survey was carried out among quantity surveying professionals who are experts in the field of knowledge in Sri Lanka. The questionnaire was developed based on the findings of the literature review and expert interviews.

Level of suitability was tested through a five-point Likert scale (1- The activity never can be outsourced, 2 – The activity is not suitable to outsource, 3 – The activity can be outsourced but it will not much effective, 4 – The activity can be outsourced, 5 – It is more effective to outsource the activity). Responses were analysed using RII.

Furthermore, Zulu et al. (2022) have used a scale with five categories to determine the importance level of drivers and barriers ranked using RII. According to Zulu et al. (2002), table 3 illustrated the interpretation of suitability levels for outsourcing each activity based on their respective RII values.

Table 3: Interpretation of RII values

RII Value	Interpretation
0.000 – 0.200	Not suitable at all
0.200 – 0.400	Slightly suitable
0.400 – 0.600	Moderately suitable
0.600 – 0.800	Highly suitable
0.800 – 1.000	Extremely suitable

The results of the questionnaire survey are summarised in table 4.

Table 4: Ranking the activities based on RII Values

Activity	RII	Rank	Suitability of outsourcing the activity
Creation of BIM models	0.87	1	Extremely suitable
Preparation of BOQ	0.83	2	Extremely suitable
BOQ Verification	0.79	3	Highly suitable
Finalising measurements in different stages of the project according to as-built drawings	0.79	3	Highly suitable
Remeasured Works	0.77	5	Highly suitable
Preparation of Bills of Materials	0.75	6	Highly suitable
Value engineering services	0.73	7	Highly suitable
Preparation of tender documents	0.71	8	Highly suitable
Providing advice on contracts	0.71	8	Highly suitable
Evaluating work variation	0.71	8	Highly suitable
Preparation of price escalations	0.71	8	Highly suitable
Providing advice on Alternative Dispute	0.70	12	Highly suitable
Preparation of cost plans	0.69	13	Highly suitable
Claims management	0.67	14	Highly suitable
Providing tax advice and insurance	0.67	14	Highly suitable
Preparation of contract documents	0.64	16	Highly suitable
Preparation of interim payment certificate	0.63	17	Highly suitable
Preparation of final accounts	0.63	17	Highly suitable
Tender evaluation	0.61	19	Highly suitable
Advising on environmental and safety aspects	0.59	20	Moderately suitable
Preparation of maintenance user manuals	0.58	21	Moderately suitable

The top activity, with a 0.87 RII score, was the creation of BIM models. This activity was not detected through literature synthesis because it is based on new technology utilised in the industry. The second task that was deemed to be extremely suitable for outsourcing was BOQ preparation. During the initial interviews, the majority of respondents positively identified the same activity.

Several tasks fall into the category of highly suitable for outsourcing. Accordingly, finalising measurements in different stages of the project according to as-built drawings, and BOQ verification is found to be equally critical with finalising measurements at different stages of the project and achieved a 0.79 RII value while ranking as the third most suitable activity. Remeasured works were discovered to be the fifth most suitable activity, ranking next with an RII score of 0.77. In addition to that, preparation of Bills of Materials, value engineering services, preparation of tender documents, providing advice on contracts, evaluating work variation, preparation of price escalations, providing advice on an alternative dispute, preparation of cost plans, claims management, providing tax advice and insurance, preparation of contract documents, preparation of interim payment certificate (IPC), preparation of final accounts and tender evaluation were identified as highly suitable activities for outsourcing based on RII values.

Advising on environmental and safety aspects and preparation of maintenance user manuals was identified as moderately suitable activities for outsourcing with the lowest

RII value. In addition, some respondents acknowledged during the expert interviews that those tasks are not quantity surveying operations.

Creation of BIM models, preparation of BOQ, BOQ verification, finalising measurements in various stages of the project according to as-built drawings, remeasured works, and the preparation of Bills of Materials was ranked as the top activities in Sri Lanka during the post-pandemic era that has the greatest potential for outsourcing. This ranking was consistent with the interviewers' responses in the previous stage.

5. CONCLUSIONS AND RECOMMENDATIONS

Though most industries have been affected by the COVID-19 pandemic, industries found a mechanism to continue business activities minimising the effect without bankruptcy. During this period, though the construction is comprised of on-site activities, remote work policies were used for professional activities. Apart from the general survival strategies in the industry, the major survival strategies that can be used in quantity surveying firms are working from home, decentralised decision-making, improving networking, retaining existing staff and outsourcing. Among them, outsourcing was identified as one of the most suitable strategies for consultant quantity surveying in firms. Strategic drivers, technological drivers, management drivers and functional drivers can be identified as the key drivers for outsourcing decisions. Quality factors were not much considerable driver because the quality of the output is depended on the outsourcing team. Subsequently, economic factors and management factors also have less priority because when outsourcing cost was not much considerable factor.

According to the results of the study, it can be concluded that measurement-related activities have more potential to outsource among consultants' quantity surveying activities since the amount of information that has to reveal to an outside party is limited. Accordingly, the creation of BIM models, preparation of BOQ, BOQ verification, finalising measurements in different stages of the project according to as-built drawings, remeasured works and preparation of Bills of Materials were identified as the activities that have more potential to outsource in Sri Lanka during the post-pandemic era.

The results of this study will aid quantity surveying professionals, particularly those who work for consultancy organisations to push for outsourcing possibilities for consultant quantity surveying activities in Sri Lanka during the post-pandemic period in order to improve the corporate image. The study's findings can be used as a guide to determine the driving forces for introducing or enhancing the outsourcing concept inside firms and putting into practice the identified potential consultant quantity surveying activities.

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