



BIM-based Competitive Advantages and Competitive Strategies for Construction Consultancy SMEs: A Case Study in Vietnam

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Abstract: Building Information Modelling (BIM) has been proven as an innovative approach to bring values to construction projects as well as stakeholders, including construction consultancy firms. BIM adoption could assist construction consultancy Small and Medium-sized Enterprise (SMEs) in enhancing their competitive capability. Using a case study with a pioneer BIM service providers which is an SME in Vietnam (the Consultant), the paper explores the core competences for delivering BIM services in relation with potential competitive advantages. Four typical BIM market segments have been discovered, which include: i) BIM strategic services, (ii) BIM services, (iii) BIM-enabled services, and (iv) BIM tools development. Exploring six BIM cases, the realized core competences of the Consultant which are reported in the paper include the BIM-related skillful human resources (both in-house and from external), BIM know-hows, reputation, and also the benefits from a BIM network that the Consultant established as an outcome of a granted BIM research project. Focusing on only the first three market segments, the Consultant has taken advantage of their core competences to deliver differentiation and focus strategies to compete and generate competitive advantages. Cost leadership strategies were not very successful in the case study due to that the economies of scale could not be met; however, they can be considered with the provision of BIM-enabled services when BIM services are delivered together with other consultancy and/or construction services.

Keywords: Construction consultancy SMEs, competitive advantages, competitive strategy, differentiation strategies, cost leadership strategies, BIM strategic services, BIM services, BIM-enabled services

1. Introduction

Competitive advantage, which can be regarded as “superior performance” or “superior profitability” (Ngowi and Rwelamila 1999, Campbell, Edgar et al. 2011), is what firms target to when they engage in strategic management (Campbell, Edgar et al. 2011, David and David 2013). In its target market, a firm possesses a competitive advantage when it has an ability to obtain higher profits than other firms operating in the same market, or it is among the limited number of firms that can create economic value in the market (Barney 2014). In order to gain the competitive advantage, firms need to select and implement their competitive strategies, among which Porter (Porter 2011) introduces three generic strategies: cost leadership, differentiation and focus.

As BIM can favour the construction projects delivery (Sacks, Eastman et al. 2018), the project stakeholders, including the consultancy companies such as designers, can benefit from BIM adoption and implementation. Therefore,

BIM has the potential to bring firms with competitive advantages (Coates, Arayici et al. 2010), and gaining a competitive advantage can be considered a driver for BIM adoption in construction consultancy businesses (Rogers, Chong et al. 2015).

BIM has been introduced to the Vietnamese construction industry in about a decade (Nguyen and Tran 2018, Nguyen, Dau-Thi et al. 2020). Among the stages in a typical construction project lifecycle, the construction stage attracts less interest toward BIM than the design stages (Nguyen, Luu et al. 2020); therefore, more construction consultancy businesses have adopted BIM than other types of businesses in the country. This implies that consultancy businesses have recognized that BIM can bring them with competitive advantages, and they can apply a competitive strategy based on the provision of BIM services to the market. In Vietnam, as observed in the industry, BIM services can be integrated with design services, project management services, or with construction services; BIM can also be provided as a separate service to support the design, construction, or project management duties. Both large firm and SMEs are providing those types of BIM services in the market. Lessons learnt from the pioneering SMEs which provide BIM services for gaining competitive advantages and delivering their competitive strategies will be valuable for other firms that are targeting in the market of BIM-enabled construction projects.

This research study aims to explore a case of an SME as a BIM service provider, which provides both BIM-enabled design services and BIM uses and as a separate service. This paper presents the process that the firm perceives BIM adoption as a competitive advantage and delivers BIM uses to their customers in line with their competitive strategies.

2. Background

2.1 Competitive Advantages and Competitive Strategies for SMEs

A firm’s competitive advantages bring it with an ability to obtain higher profits than its competitors (Campbell, Edgar et al. 2011). Competitive advantages of a firm are sourced from the development and exploitation of its core competences (Prahalad and Hamel 1997) which originate from its resources. Resources can be both tangible (human, financial, and physical) and intangible such as know-hows, patents, legal rights, brand names, registered designs, etc., and the “new knowledge through a process of organizational learning” (Campbell, Edgar et al. 2011), as well as the firm’s network (Nguyen 2009). The exploitation of the core competences can bring in the effective uses of costs, knowledge, relationships, and structure that can lead to “superior performance” or “superior profitability” for the firm. For SMEs, competitive advantage may stem from interfirm collaboration (Rosenfeld 1996, Wickam 1997, Jones 2003). Jones (Jones 2003) has summarized what he found from the literature to provide a broad picture of the sources of competitive advantage for SMEs (Figure 1). According to his research study, innovation and organizational flexibility are the key sources of competitive advantage in a firm, though other factors ranging from innovation management to supply chain management also contribute significantly to building and sustaining competitive advantage for firms.

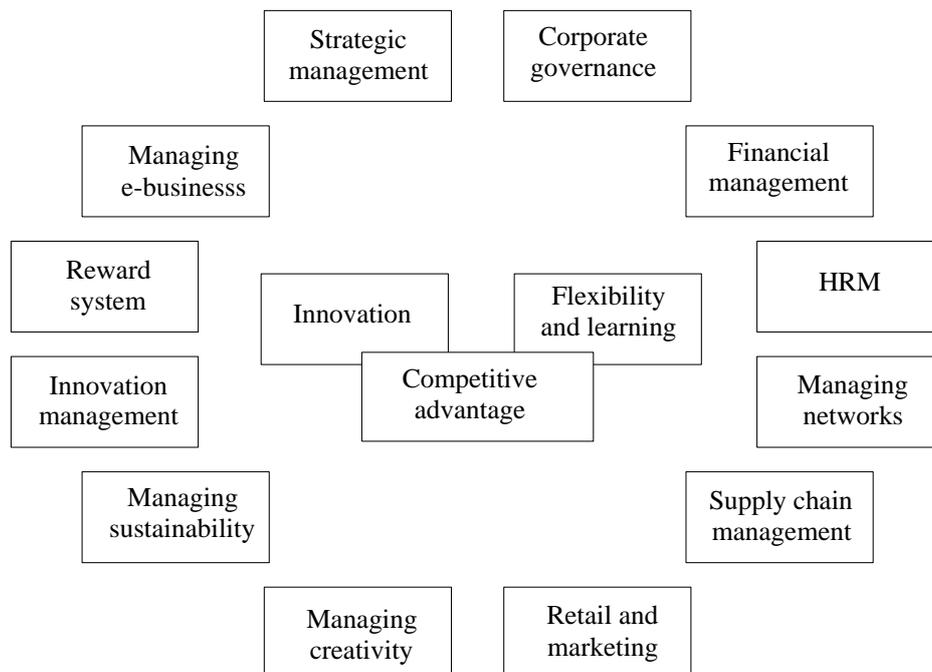


Fig. 1 - Sources of competitive advantages for SMEs (Jones 2003)

In their targeting market, a firm's competitive strategies are linked to its competitive advantages, since competitive advantage is considered the overall purpose of firms applying strategic management (Campbell, Edgar et al. 2011, David and David 2013). Literature shows that, there are three competitive strategies that firms may pursue to gain competitive advantages: cost leadership, differentiation and focus (Porter 2011). Firms pursuing cost leadership strategy aim at keeping their cost for production/service provision relatively lower than that of their competitors, by applying solutions for increasing value in the primary and support activities in their value chain (Porter 2011). Using this strategy, firms may have opportunities to ability to earn higher profits than competitors with the same price offered, or to reduce the offered price to have a greater chance in competing, or to be more competitive with the flexibility in pricing (Campbell, Edgar et al. 2011). All of these can add an additional barrier to entry for potential competitors (Campbell, Edgar et al. 2011). When applying a differentiation strategy, a firm needs to make their products or services unique, e.g. with premium features added, then they can charge customers higher prices, or their products/services can be less price-elasticity in demand, all of these can also add an additional barrier to entry for potential competitors (Mintzberg, Ahlstrand et al. 2005, Campbell, Edgar et al. 2011). With a focus strategy, a firm targets narrower market segments with the "focus" on particular groups of customers, product lines, or geographic areas. Since less investment in resources is needed for a segment than that for the entire market, the firm can use their resources better to develop its knowledge and competences (Mintzberg, Ahlstrand et al. 2005, Campbell, Edgar et al. 2011), which are the sources of competitive advantages.

Apart from those generic strategies, a firm can still pursue a hybrid strategy which is a combination of differentiation and cost strategies. The combination strategies will help the firm avoid being "stuck in the middle", a situation of suboptimal performance that Porter claimed a firm would be in if it tried to stay between the two strategies (Porter 2011). It is noted that the strategies do not help to sell products/services or generate competitive advantages, they just help the firms to use up their competencies and resources, which are the sources of competitive advantage (Miller 1992, Johnson, Scholes et al. 2009, Rymaszewska 2014).

Like other firms, SMEs always aim to achieve a competitive position in their target market. Their performance will be improved when their strategic resources are utilized for pursuing competitive strategies (Gede, Artha et al. 2020). A successful competitive strategy will need to address key customer service processes, while concerning cost control, supplier and wider network partnerships (Ardley and Naikar 2021). That is to say, competitive strategy plays a "mediating role" in using capabilities to create value for SMEs (Rashidirad and Salimian 2020), therefore, contributing to create competitive advantages.

2.2 BIM Application in Vietnam

As reported by Nguyen and Tran (Nguyen and Tran 2018), BIM has been introduced to Vietnam in late 2000s, first in the private sector. Not until 2016, when the Prime Minister (The Prime Minister Vietnam 2016) issued Decision 2500/QĐ-TTg on the approval of the project to apply Building Information Modelling in construction activities and the operation management of construction works, the country has an official roadmap for boosting BIM adoption. After that, with the campaigns for implementing the roadmap launched by Vietnam BIM Steering Committee, the training curriculum, materials, and guidelines for BIM implementation for pilot projects has been developed and released. Some public investors and project management boards have been provided with initial training using the materials. Two lists with total projects of 32 have been registered by the investors with the BIM Steering Committees as BIM pilot projects, which include both projects in the public and private sectors (Minister of Construction - Vietnam 2018, Minister of Construction - Vietnam 2019). Until the end of 2020, just 7 projects from the lists have been officially reported to apply BIM in reality (Vietnam BIM Steering Committee 2020). The Vietnam BIM Steering Committee has continued to deliver training, now open to audience from all of the sectors, since 2019, first in traditional (face-to-face), then switched to virtual mode due to Covid-19. Together with the training, virtual seminars have been organized to share lessons learnt from both local and overseas speakers. Therefore, BIM uses have been reported in more and more construction projects, but almost of them are from the private and FDI (foreign direct investment) sector, therefore, may not be reported through the official communication channels of BIM Steering Committee.

From the Government's research project on "Building Information Modeling (BIM) roadmap for improving efficiency of design, construction and facility management activities in Vietnam" (Nguyen, Ta et al. 2015), it is reported that some large contractors and design consultants take the lead in BIM adoption. However, there existed another market for BIM consultants, which are specialized in developing BIM models, in which they work as outsourcing subcontractors to foreign clients. Most of those subcontractors who deliver outsourcing BIM services are SMEs (SMEs in Vietnam in the service sector include firms with headcount of not greater than 100, annual revenue of maximum 300 VND bn and total capital of not exceeding 100 VND bn (Vietnamese Government 2018)). When large property developers such as Vingroup saw the benefits that BIM application could bring to their projects, they started to recruit consultants who can deliver BIM services, therefore, the demand for BIM application has increased significantly. Other design consultants start recognizing the demand and planning for BIM adoption in their business. Literature and official reports show that BIM services have been provided in buildings (Vietnam BIM Task Group 2018), power projects (transformer station) (Nguyen, Luu et al. 2020), irrigation and hydro power projects (Tran, Nguyen et al. 2020), infrastructure and transportation projects (Bui 2018, Khuc and Dinh 2018), and also industrial projects (Vietnam BIM Task Group 2018).

BIM has been reported to be adopted by large architectural and structural design consultants, mechanical, electrical and piping (MEP) design consultants, design and build main contractors and BIM solution service providers (Nguyen 2018), and also SMEs (Vietnam BIM Task Group 2020) in the country. Firms started recognizing that BIM can be a source of competitive capability, not only for large firms, but also SMEs (Vietnam BIM Task Group 2020).

3. Literature Review: BIM-Based Competitive Advantages and Competitive Strategies

In an increasingly competitive market, firms need to adopt new technologies and to develop their innovative capabilities in order to survive and thrive (Tulubas Gokuc and Arditi 2017). In the construction industry, with the emergence of Building Information Modelling (BIM), firms may have another source of competitive edge. Sacks, R., et al. (Sacks, Eastman et al. 2018) have claimed that gaining “a competitive advantage in the marketplace” is one of the purposes for BIM adoption of both design and construction firms. BIM creates business value, called BIM business value, such as reduction in cost and time, better information and product quality, new markets and services, retention of old customers, positive return on investment (Mom, Tsai et al. 2014) which are the sources of competitive advantages. The value comes from the higher efficiencies in delivering project with BIM, or benefits obtaining from delivering new types of services such as project visualization, automatic clashes detect, structural and energy simulations or other BIM uses that can facilitate the project management job.

Consultancy SMEs have several advantages compared to the large firms, especially when considering digital transformation, such as their thinner structure, which helps them to transform more quickly. The BIM adoption process in these firms, therefore, will be expected to receive results after a shorter period and such results might have more significant impacts to measure than in the large ones. Literature shows that developing digital BIM-objects can be a competitive strategy for material suppliers, since it can help them to approach digitalized designers and contractors more easily and conveniently (Bredberg 2020). Another research study has pointed out that since SMEs do not apply strategies for BIM adoption, they experience competitive disadvantage in both public and private market (Awwad 2019). However, there is no research study found in the literature regarding how construction consultancy SMEs can pursue their BIM-related competitive strategies for obtaining their competitive advantages.

4. The Case Study

Exploratory research aims only to find out features, ideas or propositions, but not to test a hypothesis, so has been selected for this research study. For data collection, a case study research approach was used, with a construction consultancy body providing BIM services since 2017 (hereafter referred to as the Consultant or sometimes BIM Consultant). The research study explores the development of the Consultant in provision of BIM services from 2017 up to 2020, therefore, the qualitative methodology applied is similar to action-research. The Consultant’s original business lines include the provision of construction consultancy services (design, construction supervision, project management and other related technical services in construction), technology transfer, and delivery short course training in relation to construction professional careers. Following a research project funded by an overseas grant, conducted on 2017-2018 on promoting BIM application in the construction industry, the Consultant realized that there would be an increasing need of BIM services provision in the market. Therefore, it started to invest in BIM capacity to enter the BIM-related market segment. Since 2017, the Consultant has approached a number of clients, through tendering or direct marketing, to offer BIM services, with the typical ones summarized in Table 1.

Table 1 - Brief information on selected BIM cases conducted by the consultant

Codes	BIM services	Client Types	Service years
Case 1	Selected BIM uses for a high-rise complex building: - Design authoring - Clash detection - Schedule simulation - Quantity take-off (general requirements)	DB (Design and Build) Main-contractor	2017-2018
Case 2	BIM adoption plan: - BIM adoption strategy - List of BIM-related processes - Instruction to develop BIM-related processes	Investor that also works as a Main-contractor (DB and Construction)	2017-2019
Case 3	Selected BIM uses for a high-rise apartment building: - Design authoring - Clash detection	Investor	2018-2019

	<ul style="list-style-type: none"> - Schedule simulation - Quantity take-off (general requirements) - 3D model walkthrough 		
Case 4	<p>Selected BIM uses for an urban area development project:</p> <ul style="list-style-type: none"> - Design authoring for selected parts of the projects - Clash detection - Quantity take-off (earthwork and sea embankment) - Project Visualization 	Urban Area Developer	2018-2020
Case 5	<p>Research and Development Project on BIM uses applied in a high-rise apartment building:</p> <ul style="list-style-type: none"> - Design authoring - Clash detection - Quantity take-off - 3D model walkthrough - BIM adoption strategy - BIM processes and guides - Providing on-the-job training 	Main contractor (Construction)	2019
Case 6	<p>Selected BIM uses for a water irrigation project:</p> <ul style="list-style-type: none"> - BIM adoption plan - Organizing and training BIM team (on-the-job training) - BIM processes development - Design authoring - Clash detection - Quantity take-off (main quantities) - 3D model walkthrough - Fabrication/Production drawings - Scanning during construction progress for updating BIM models - As built drawings 	Public Project Management Unit (PPMU)	2020-2022

It is noted that the Consultant has played the roles of a BIM strategic consultant, a BIM services provider, and also a provider of BIM-enabled construction consultancy services. The services it has provided to the market vary from case to case. However, the values that BIM can bring to its clients can be perceived more clearly over time when the services provided to its clients include the BIM adoption strategy, training and BIM-based consultancy services. The cases will be discussed below to explore the competitive advantages and competitive strategies that the firm has applied to evaluate the BIM-related performance of the Consultant.

5. Discussions

5.1 Perception of New Market Segments for BIM-Related Services

Being introduced to BIM since 2012, the Consultant has recognized the benefits BIM can bring to construction projects. Though there was a controversy over BIM application, the Consultant started their first research and development project for BIM adoption in the firms in the AEC (Architecture, Engineering and Construction) industry, from 2016. A new team was established then started their BIM career from learning to do BIM authoring with Autodesk Revit, the most popular software for BIM modelling, recognized by the Consultant at the time in Vietnam. The team had a chance to model several existing projects using their 2D CAD drawings. Then, in 2017, the Consultant was awarded a project for promoting BIM in Vietnam by developing training curriculum for the human resources with the support from overseas experts (BIM research project). Two BIM experts from overseas came to Vietnam to deliver a train-the-trainer BIM course, then a BIM course to professionals, including academics, civil servants and industry practitioners in a BIM Week. The BIM Week attracted lots of professionals from both firms with and without BIM application to participate

and share their opinions, knowledge and practical experiences. As a result, the Consultant has established a good network of BIM individuals and organizations (BIM implementors) and other construction professionals (BIM network). Among the network, the Consultant is famous as a pioneer in BIM application in Vietnam.

Based on the information collected from the network, the Consultant perceived that there are some market segments emerging for BIM services, which include: (i) BIM strategic services, (ii) BIM services, (iii) BIM-enabled services, and (iv) BIM tools development. With BIM strategic services, a firm can assist other players in the AEC industry, also the operation management firms in developing their strategies/plans for BIM adoption and BIM implementation, providing instruction and demonstration in delivering BIM uses, preparing BIM documents, procedures and processes and also providing training to develop the human resources. To provide BIM services, the consultancy firm will sign a contract with its client to deliver selected BIM uses for the client’s projects. The BIM uses applied in the projects can be regarded as There are lots of BIM uses may be selected for a construction project, the most popular ones recognized by the Consultant include: capturing existing condition of the construction site, design authoring (model development, including federated model development), project visualization (3D), 3D model walkthrough, design clash detection, energy analysis, fabrication drawings, construction site simulation (logistics), schedule simulation, quantity take-off for selected construction works, updating BIM models (with or without laser scanning), and as-built drawings.

Those BIM uses are provided separately but in a collaborative way with the main construction activities which are delivered by other consultants or contractors. Different BIM uses require different sets of knowledge and skills of the human resources, and also other resources such as IT equipment (high-configuration personal computers, laptops and stations, etc.), software, laser scanners, projectors, high-speed internet connection etc. and the involvement of selected project stakeholders. For delivering BIM-enabled services, a consultant needs to integrate the BIM services with other construction services, from field investigation and survey, design, construction, quantity surveying, construction supervision and management etc. To compete with these services, firms need to possess capability not only for BIM services, but also for delivering those construction activities. It is noted that in Vietnam, in order for a firm to operate in the construction market to deliver construction services, the firm need to possess relevant organizational construction licenses. The last market segment is dominated by professional BIM tools developers. However, some construction consultancy, while working with BIM, have developed some small tools (like APIs) for facilitating their performance (e.g. accelerating the modelling process of for quantity take-off). They then can use the tools developed in delivering better services or transferring the solutions to clients.

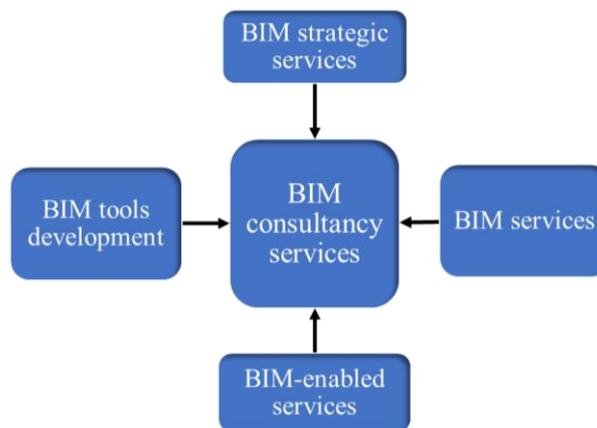


Fig. 2 - Emerging BIM consultancy services

It is noted that the new BIM markets include clients who are not only the project investors/owners, but also other types of firms such as design consultants, contractors, DB contractors. Even the firms that target the BIM consultancy services can be in the targeting group of the Consultant.

5.2 BIM Competences and BIM Competitive Advantages

In order to provide services to the construction market, a consultancy firm needs to have relevant organizational consultancy licenses, if the laws and regulations require. However, since BIM is new to Vietnam, there is no need for BIM licenses obtained by the organizational and individual consultants. The consultants just need to prove that they have necessary experience and capabilities to deliver the services.

Considering its resources, the Consultant decided to target the first 3 BIM market segments as discussed in Section 5.1. However, since the integration of BIM into the design services need time, it initially started with the first 2 types of BIM consultancy services, while not ignoring any opportunities for the third type of BIM services. Considering the competences that it possesses to operate in their existing market, all of its tangible and intangible human resources can

be mobilized for the new services. However, to be competitive in the new market segments, the Consultant has identified and begun investing in their BIM human resources, developing BIM knowledge and skills that have been transformed to know-hows. Taking advantage of the granted BIM research project, the Consultant enhanced their brand name, linked it to BIM and widened its network to individuals and organizations which have interest on BIM. Considering the criteria that Hamel and Prahalad pointed out (Pralhad and Hamel 1997), the core competences of the Consultant then have been identified, which include BIM-related skillful human resources (both in-house and externally mobilized specialists), BIM know-hows with the technology transferred from the overseas experts as well as from the local companies leading the BIM market in Vietnam whose staff participating the BIM Week.

Opportunities for new jobs and technological, technical and specialist supports from the newly created BIM network can add in the Consultant's core competences. The competitive advantages originate from those core competencies can be as follows:

- Higher reputation then lots of customers come to find the Consultant when they think of BIM application, especially the organizations in the newly created network; this can reduce marketing and competing expenditures.
- In-house human resources have been trained by overseas and external experts in the BIM research project, therefore, costs for training human resources to adopt this new technology is lower.
- BIM application can bring benefits to clients, this fact has been proved internationally and perceived in Vietnam, therefore, the BIM application can add premium features to the services provided to the firm's clients or to the clients' products/services.
- The BIM know-hows transferred from overseas and external experts can contribute to the quality assurance of the BIM services provided to the markets.
- Specialists from the network can support the Consultant in technological, technical issues, with reasonable costs. This can keep the BIM costs to minimum and also enhance the human resources capability of the Consultant.
- With the close link to the network of BIM implementors, the opportunities for collaboration for enhancing capability not only in BIM application, but also in other types of construction professional activities, will be higher; this leads to less costly and more convenient in finding a partner for bidding. Therefore, the chance for winning BIM services or BIM-enabled services will increase.
- With the BIM strategic services, lots of the documentation for providing the services can be re-used for other customers, provided that they are the same type; this can reduce the cost for service provision.
- Those competitive advantages will be discussed more below in line with the competitive strategies the Consultant applied.

5.3 BIM-Related Competitive Strategies

The Consultant approached the first client in Case 1. The Client in this case is a Design and Build main contractor which was constructing a high-rise complex building. The project owner is a joint venture between a Vietnamese and a Japanese company, in which the Japanese hold the majority of shares. Since BIM was rather popular in Japan at that time, the Japanese's partner of the project was seeking for a BIM consultant, and the Consultant was called to submit a tender and then sign a contract. However, since the Consultant had no practical experience in BIM services, it had to partner with another BIM consultant to bid for the project. In this case, the reputation of the Consultant worked, together with its valuable network. This case was not a fully successful case, due to that the design services by another subcontractor were behind the schedule, therefore, there was not enough time left for the Consultant to do the design authoring and clash detection. Some clashes discovered could not be solved in the BIM model and were left for the construction stage. The value added for the client was less than expected. Therefore, though the Consultant planned to apply a combination of differentiation and cost leadership strategies, only differentiation strategy was implemented. The cost for BIM services was high because the Consultant had to mobilize more resources to deliver their services on time for keeping value added for the client. A lesson was learnt that in order to take most advantage of the BIM uses, the Consultant may need to consider to provide BIM-enabled services rather than providing BIM services alone.

Another call was from a DB main contractor which also plays as an investor in some housing projects in Case 2. The client found the Consultant's contact details from the news on the BIM Week. The Consultant was directly invited to come and give a short lecture on BIM application to the board of directors. The client then raised a request for a proposal for developing a BIM adoption plan. However, the client changed their BIM objectives and scopes lots of time, then decided not to proceed with BIM services in the present; therefore, no contract was awarded though the Consultant sent in their proposals several times. Apparently, the differentiation strategy was successful in this case, with a focus on the customer group of building projects. And again, the reputation of the Consultant worked in attracting new customers.

A member in the Consultant's BIM network connected the Consultant with her company, which is an investor for a high-rise apartment building (Case 3). The Consultant sent in a quotation for 4 important BIM uses which include design authoring, clash detection, quantity take-off and 3D model walkthrough and an additional BIM use of schedule simulation. Actually, another BIM consultant had approached the client in Case 3 to offer their BIM services, but the

client tilted on the Consultant due to that the Consultant had participated in a real BIM-enabled project, while the competitor could only show some illustrations borrowed from the internet. However, the Consultant could not enter a contract with the client, due to that the client considered the value-for-money that BIM uses bring to them was lower than what they expected. In this case, differentiation strategy nearly helped the Consultant to gain their competitive advantages, with the use of its reputation as one of the market leads in the network on BIM application.

With Case 4, the Consultant was approaching an urban area developer for proposing a design service. In order to persuade the client, the Consultant decided to use BIM to add in a premium feature to the proposing services, modelling the project area for better visualization. Also, with the use of BIM application, the job of quantity take-off for earthwork and sea embankment was quicker and easier, which led to some cost reduction. Also, due to that the project consists of lots of infrastructure structures such as roads and bridges, water supply and water drainage systems, power supply systems, telecommunication systems, trees and pavement etc., the use of BIM for clash detection can ensure a better quality and reduce the risk for the construction stage, which the investor and their consultants could see very clearly. With a combination of differentiation and cost leadership strategies, a contract was then awarded to the Consultant.

In Case 5, one main contractor from the network approached the Consultant and offered a Research and Development project, in which they expected the Consultant to conduct a research study to assist them to develop BIM capability with the role of a main contractor (this firm also played as a developer in some housing and urban area projects). They asked the Consultant to use an action research approach, to work with them in a real high-rise building project. However, since the client valued the research budget rather low, the two parties could not come into a contract. This case shows that, since BIM is new, cost for the services and for market entrance is rather high, therefore, sometimes the clients are not willing to pay extra costs for the premium features that BIM can bring to them. Again, differentiation strategy helped the Consultant to attract customers.

Case 6 is the only case in the list with a client from the public sector. In 2020, the BIM market became more popular, therefore, some public projects have allocated a budget for BIM services. The BIM services in the project of Case 6 were requested through an open tendering process. The services requested include services in both groups of BIM strategic services and BIM services. By delivering this tender package, the client aimed to build up their BIM capability through a practical project, by on-the-job training. Therefore, they value seriously the service providers who have experience not only in delivering practical projects, but also in delivering BIM training and assisting in developing BIM adoption strategies. The previous experience of the Consultant worked on this case in a differentiation strategy, and a contract was awarded to the Consultant in late 2020. However, to win this tender package, the Consultant had to mobilize external resources for some special works such as laser scanning and recruit a BIM manager who had worked in large irrigation projects. The core competences were utilized for this tender include its previous BIM-related experience in delivering some infrastructure projects, and previous contracts on delivering training and assisting the development of BIM adoption strategies.

Though the Consultant was not aware of strategic management, it has well utilized its core competences to compete. The successful strategies realized in its competition include differentiation and differentiation focus. Only when did it deliver a combination of BIM consultancy services from different groups, it can experience cost reduction, then the cost leadership was formulated.

To summaries, in an early market for BIM services like Vietnam, it is hard for BIM consultancy services providers to compete using a cost leadership, especially when they compete for BIM services only. Due to that the economies of scale cannot be achieved, the consultants often cannot offer a low price; in fact, their BIM consultancy services prices are often set high. Only the premium added-features worked for them when the clients were persuaded to hire a consultant.

However, if a consultant can integrate its BIM services with other construction services such design or construction, construction supervision or construction management, the clients may be more easily to accept provided that they can perceived the value-for-money of such supplementary services.

6. Conclusions

Construction consultants when compete in a market need to use up their core competences to generate competitive advantages, which can help them to achieve “superior performance” in order to have higher chance for winning contract awards. When BIM is adopted in the construction industry, several new types of services linked to BIM have emerged, which form three new market segments for BIM strategic services, BIM services, BIM-enabled services and BIM tools development. The Consultant in the case study in this paper, an SME in construction consultancy, focuses on only three first market segments. The Consultant caught the opportunities created by a BIM research project it had delivered with external supports to develop its core competences of BIM-related skillful human resources (both in-house and from external), BIM know-hows, reputation, and also the benefits from a newly established BIM network. The core competences have brought the Consultant with a number of competitive advantages, which are related to cost reduction, higher reputation, chance for providing customers with unique products/services or premium features added to the traditional products/services. The competitive advantages have been utilized in competing for contracts with BIM consultancy services. However, if there is a chance, provision of a BIM-enabled consultancy and/or construction services can reduce the cost more than providing BIM services alone.

Though Porter (Porter 2011) has suggested three competitive strategies, only differentiation and focus strategies worked well for the Consultant. The cost leadership strategy was not very successful; this can be explained by the immature of the BIM markets in Vietnam, where firms find it difficult to achieve economies of scale.

Lessons learnt from this case study will be valuable for construction SME consultants which have a plan to enter the BIM market. They can have better perception on the types of the BIM market, which consists of 4 typical segments, to select the targeting ones more easily. They can recognize the competences and core competences needed to compete in those BIM markets in order to create competitive advantages. Also, they can learn from the Consultant in making strategic choices for competitive strategies. Further research study of a larger sample size can be conducted to validate the research results in a wider range.

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