All Businesses to Involve Health Diagnostics in Post COVID-19 World? A Theoretical Framework

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This article presents a framework for business entities to partner with health diagnostic businesses (HDB). Authors expect that in post COVID-19 scenario, diagnostics operations would become integral to day to day business operations similar to physical security or janitorial services. HDB partnership would become a pressing need for any business that involves intense physical interaction. The authors identify a set of factors that should be considered to decide the type of partnership. The options proposed are acquisition, equity-based / non-equity-based partnership and diagnostics from an accredited entity. Further, a set of steps for each of these options are proposed.

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Introduction

The world of business received the shock of, metaphorically speaking, a once in a hundred-year flood in the year 2020. By the second week of May 2020, worldwide the number of COVID-19 cases crossed four million and resulted in about three hundred thousand deaths (Wong et al., 2020). The spread of the virus had prompted many governments to closedown public spaces, community premises and businesses with high footfall (Aljazeera, 2020; Choudury, 2020). Major world economies halted, and most businesses slowed down and stocks values plummeted (Jones et al., 2020). Business like shopping malls, airlines, hotels, restaurants, educational institutions, sports business, and many others registered abrupt drop-in activity and sales subsequently (Ghosh, 2020; Horwitz, 2020). The primary question that became pertinent was how to bring these businesses back to action given the high risk of spreading the contagion given its high infection level. The secondary

question was regarding avoiding a repetition of similar situation in the future. Industries and businesses that survived on receiving high number of individuals (customers, employees, and others) in its premises had to rethink the very way of doing business. The authors argued that these businesses would have to incorporate an integrated fashion health diagnostics mechanism in its operations. This could be done either by acquisition or partnership with a Health Diagnostic Business (HDB). HDB in this context, according to the authors, would entail firms that would carry out scanning temperature of individuals, rapid blood test for infection detection (bacterial and viral), blood sugar level check, serum tests (if required), blood pressure test and such others. Individuals referred here would vary for different types of business. It would consist of customers, clients, visitors, employees, shoppers, students, and such others.

Towards this end, it would become, firstly, important to ascertain what would be the nature of partnership or acquisition. Secondly, the valuation of HDB would become a prime need for businesses in this context. Both the type of engagement with HDB (partnership/ acquisition) as well as the valuation of it would be contingent upon a number of factors. These factors could be both internal to the organization as well as external business environment factors. Generally, the interaction of the factors affecting value of a firm HDB engagement would be unique and dependent upon the organization and the industry. Identifying accurately the mix of this interplay of factors for an HDB would be challenging for managers. In this article, the authors attempt to address this aspect by developing a framework.

Theoretical Argumentation

One can, in general, argue that one firm collaborated with another firm when it did not possess the required resources and capabilities to address a market need (Tutel & Urban, 2001). Dyer et al. (2004) recommended that a company pursuing merger or acquisition should identify the 'purpose' of the same. Managers must vet if the purpose required an acquisition, an equity share or just a non-equity alliance would be sufficient. They classify all the considerations between choice of an alliance (equity/ non-equity) versus merger and acquisition (M&A) into dimensions of synergy, resources, and market condition. Damodaran (2005) analyzed ways through which value enhancement could be achieved by a firm. Martin (2016) posited that an acquisition had higher chances of success if the aquirer had the ability to contribute to the value enhancement of target post acquistion by one or more of the four ways. These entailed being a smarter provider of growth capital, by providing better managerial oversight, tranferrence of valuable skills and by sharing of valuable capabilities (Martin, 2016). Lee, Kim & Park (2014) suggested that the studies of human aspects of merger and acquisitions could be classified into 'value conflict' and 'identity conflict'. In the former, cultural differences were considered as an independent variable which was stud-

ied with dependent variables like performance, knowledge transfer and others. In the 'employee identity conflict', differences were suggested to be arising if the employees of the acquired firm stuck to their older identities of the target firm and did not adopt the new identity of the acquirer firm. Lee et al. (2014) had also suggested that both the factors of cultural difference and identity conflicts play a role in the human factor of merger and acquisitions. They recommended that the natural cultural differences played a role post acquisition, but it could be leveraged for improving the synergies if the differences were perceived as something useful. Further, whether acquired employees perceived their newly created self-image to be more attractive was more important than intensity or speed of post-merger integration.

It would be important to understand what costs would be associated with an HDB in this context. According to the authors these costs would be incurred due to various tests like scanning temperature of individuals, rapid blood test for infection detection (bacterial and viral), blood sugar level check, serum tests (if required), blood pressure test and others. Individuals referred here would vary for different types of business. It would consist of customers, clients, visitors, employees, shoppers, students, and such others. The authors applied these aspects as a set of guiding factors for arriving at the framework. The set of steps to decide on the form of partnership with a firm with HDB recommended in this article consists of four steps.

- Step 1: Identifying the type of partnership based on relative size and need of the entity looking for partnership and HDB.
- Step 2: Assessment of the HDB
- Step 3: Identifying enhancement opportunities post the partnership/acquisition.
- Step 4: Chalking out aspects of execution plan

The different types of partnerships have been depicted in fig. 1.

The type of firm -HDB collaboration would be contingent upon different types of businesses-like educational institutes, shopping malls, sports venues, large and dense office complexes, large and dense manufacturing facilities, religious places, cinema halls and such others. Though, Dyer et al. (2004) had suggested that hard resources should usually be acquired. However, we recommend choosing between different options for the hard resource if an organization was looking for partnering with HDB. There were four options which were identified by us viz. acquisition, equity-based partnership, non-equity-based partnership, and diagnostics sought from any accredited network of entities. While developing the framework we had applied five dimensions for vetting the type of collaboration. This has been tabulated in Table 1.

A few of the criteria identified in the above stage were qualitative and needed subjective interpretation by managers. The number of footfalls (NF) was a quantitative criterion. Organizational capital

Fig. 1 Business Partnerships with HDB Firms in Future

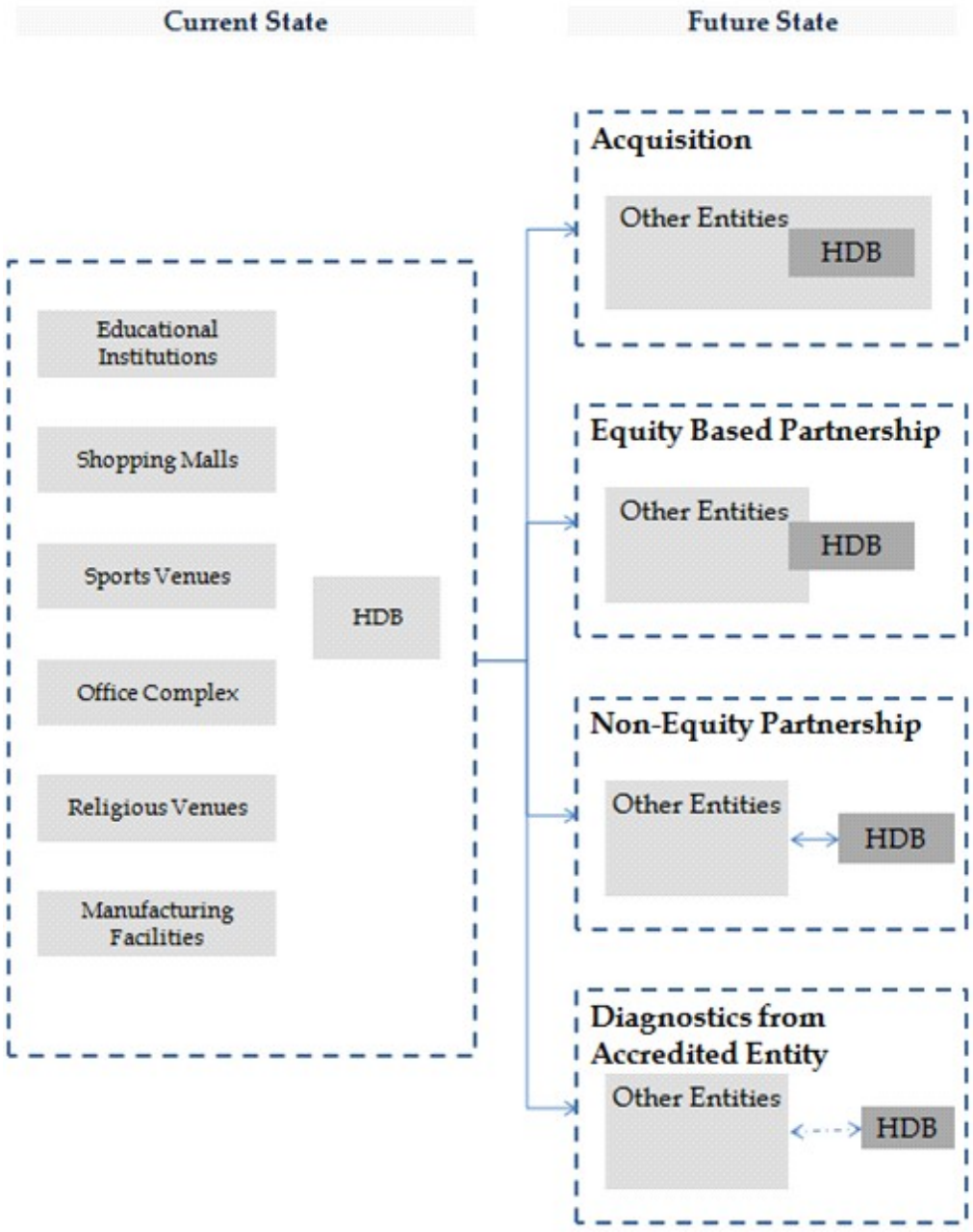


Table 1 Factors Influencing Choice of Firm-HDB Collaboration

S. No.	Factor	Remarks
1	Number of Footfalls (NF)	This factor indicated the number of individuals visiting business premises.
2	Organizational Capability Bandwidth (OCB)	Organizational resources and capabilities to manage internally or supervise externally HDB services.
3	Organizational Capital Availability (OCA)	Availability of organizational capital to manage internally or externally HDB services. It could be towards even incorporating a new HDB as a new entity.
4	Technology Complexity(CT)	Ability of firm management to manage HDB related technologies ecosystem in an integrated manner on a real time basis.
5	Stakeholders Expectation(SE)	This factor represented the expectation of stakeholders regarding the way individuals wanted to be treated in business premises.

availability (OCA) for provision of HDB services gained could be ascertained quantitatively. Organizational capability bandwidth (OCB) to provide relevant managerial supervision for HDB would vary across firms and would be dependent upon the hard as well as soft (top management focus, organizational culture, and others) resources and capabilities of the firm, whereas Technology complexity (TC) could differ based upon the nature of business. The diagnostic needs of educational institutions were relatively simpler since the visitors were a captive group of students and faculty members primarily. A diagnosing technology that generated immediate report was not required in this context. Diagnostics could be done for every student/ faculty for every fortnight, month or so. Also, the analytics to be performed to trace the exposure of the visitors was not very complex. This was because it consisted of a limited data set whereas in a shopping centre, the number of visitors arriving were not same on any given business day (generally much higher on weekends or holidays) and thus high-speed diagnosing and complex analytics of exposure tracing were needed. In the factor of 'Stakeholder Expectations' (SE) in the list of criteria (Table 1), the expectations of customers and regulators too were different in different contexts. For example, regulators might expect extreme care in educational institutions whereas they might not expect so much vigilance in a high-end restaurant involving wealthy customers. But wealthy customers might expect the owner to have state of the art vigilance in such a restaurant. In Table 2 we have tabulated the five factors and the four options for collaboration.

The diagnostic needs of educational institutions were relatively simpler since the visitors were a captive group of students and faculty members primarily.

An HDB would be assessed in two aspects of performance capability and cost. Performance capability would be assessed based on the capacity of HDB

Table 2 Factors & Modes of Firm-HDB Collaboration

S.No	Factors	Values	Collaboration Type	Remarks
1	Number of Footfalls(NF)	Very high	Acquisition	High footfalls called for well-integrated diagnostics procedures. Acquired HDB was deemed favourable to meet such a goal.
	Organizational Capability Bandwidth (OCB)	Available		If the firm had requisite ability to manage HDB, then acquisition was a cost-effective option compared to other options.
	Organizational Capital Availability (OCA)	Available at low cost		Low cost of capital ensured better trade-off between revenue saved through HDB and money spent on acquiring HDB.
	Technology Complexity (CT)	Manageable to low		A manageable technology ensured less dependence of management on external expertise.
	Stakeholders Expectation (SE)	High to medium		High expectations from stakeholders required better controlled diagnostic processes which in turn were more achievable through acquired entity.
2	Number of Footfalls (NF)	Medium to high	Equity based partnership	Medium footfalls might not need rapid diagnostics and thus an equity-based partnership with HDB might be sufficient rather than an acquisition.
	Organizational Capability Bandwidth (OCB)	Not available		The lack of organizational capability bandwidth called for retention of the management structure of HDB and thus equity infusion was preferred.
	Organizational Capital Availability (OCA)	Available at low cost		Low cost of capital ensured better trade-off between revenue saved through HDB and money spent on acquiring HDB, thus equity

				infusion was preferred upon non-equity partnership.
	Technology Complexity (CT)	High		Need of high technology called for retention of management structure of HDB and thus equity partnership was preferred over acquisition.
	Stakeholders Expectation (SE)	High to medium		High expectations from stakeholders demanded close coordination between the business entity and HDB . Thus equity investment was preferred over non-equity partnership.
3	Number of Footfalls (NF)	Low to medium		Non-equity-based partnership Relatively lesser footfall required lesser control and integration of diagnostic procedures and thus non-equity-based partnership was deemed sufficient for effective use of HDB capacity.
	Organizational Capability Bandwidth (OCB)	Not available		Lack of OCB required avoidance of acquisition or equity infusion.
	Organizational Capital Availability (OCA)	Available at high cost		High cost of capital called for avoidance of acquisition or equity since capital spent did not justify the revenue generated by HDB's risk mitigation capability.
	Technology Complexity (CT)	High		If the requisite technology was high, partnership was preferred over adding a high effort non-core activity to business.
	Stakeholders Expectation (SE)	Low to Medium		Non-equity partnership was deemed sufficient in a business in which stakeholders had low to medium expectation regarding health diagnostic needs.
4	Number of Footfalls	Low	Diagnostics from network from any accredited network of entities (NF)	Diagnostics from accredited entity was considered sufficient if the business entity had low footfalls. Like for a firm that employed

		single digit employees and rarely got visitors.
Organizational Capability Bandwidth (OCB)	Not available	Lack of OCB called for avoidance of acquisition or equity infusion.
Organizational Capital Availability (OCA)	Not available	In case of a smaller firm, lack of capital and low footfall ruled out acquisition or equity or non-equity partnership.
Technology Complexity (CT)	Low	If the diagnostic needs were very low, with the mix of other factors of low footfall, diagnostics from any accredited network was considered sufficient.
Stakeholders Expectation (SE)	Low	In case of low stakeholder expectation, diagnostics from any accredited network of entities was deemed sufficient over other options.

In the case of acquisition, it would be the cost of acquiring the HDB and in the case of partnering, the transactional costs of diagnostics would be assessed.

in to support the number of footfalls and availability of requisite technology. The costs would comprise two elements. In the case of acquisition, it would be the cost of acquiring the HDB and in the case of partnering, the transactional costs of diagnostics would be assessed. The cost of acquiring/ partnering with an HDB should be weighed against the revenue that would be generated by attracting customers through risk mitigation achieved by incorporating diagnostics. Managers could undertake the following steps for evaluating HDB. Firstly, managers must undertake a cost versus capacity assessment (CCA) of the HDB. In CCA analysis the questions tabulated in Table 3 need to be answered by managers.

Addressing these questions would help managers identify the 'cash flow volatility' of the asset that being the HDB. In case of non-equity partnership, managers should keep the window of renegotiation open for diagnostic rates. This would be to ensure prices that were set in accordance with emergent reality once the new normal reality reached equilibrium. Considering the competitors reaction to current shortage/excess of capacity, demand, and supply pattern of the industry rather than simple extrapolation of current numbers could help in more accurate estimations.

The next step, subsequent to assessment, would be towards identifying improvement opportunities in HDB. The improvement opportunity should be envisaged in terms of operational improvement and financial

Table 3 Cost versus Capacity Assessment (CCA) of the HDB

S.No	Question	Remarks
1	Whether there was capacity shortage that had shot up valuations of HDB/costs of diagnostics in industry?	The valuations of HDBs might indicate spike due to immediate demand of the business. Consider appropriate normalization in cash flow for subsequent years to estimate NPV. For non-equity-based partnering, set transactional prices with a long term view and with option of renewal of rates in short/mid-term future.
2	Was the capacity shortage/excess and thus higher/lower return on assets, a temporary or a permanent phenomenon?	Acquiring firm managers must become aware that there would be capacity glut in subsequent years when there would be investment rush into HDBs. Leveraging factors of production more efficiently was important. Also, cognizance of long-term average capacity was important to decide transactional rates, in case of non-equity partnership.
3	How are the competitors reacting to the shortage/excess and how soon will the competitors' reaction result in capacity glut/shortage in the market?	If competitors were rushing to create HDB capacity, then this would create capacity glut in subsequent years. Managers should avoid overpaying for HDB in deal heat. If HDB capacity creation was difficult in view of requisite managerial and technology complexity, then there would be capacity shortage.

improvement. The operational improvements should help managers identify opportunities to leverage economies of scale in diagnostics processes for which HDB was partnered with. The financial improvement should leverage the net present value (NPV) model. As per NPV model, value of a firm was dependent upon the factors of 'the amount of cash flows', 'rate at which those cash flows were being discounted' and finally 'the duration for which the cash flows were expected'(Damodaran, 2005). Leveraging Damodaran's (2005) framework, improvement opportunities in any of these factors in HDB were recommended to be identified so that assets (of HDB) acquired at low cost could be subsequently improved by leveraging identified interventions. This analysis has been presented in Table 4.

The opportunities identified in Table 4 were recommended to be coupled with the four factors identified by Martin (2016). The four factors that could favorably impact the deal were the ability of acquirer to provide growth capital to scale up HDB activities, the ability to provide managerial oversight to HDB, the ability to transfer a skill and ability to share a skill/resource. Once collaboration managers had addressed the HDB's improvement opportunity and acquirer's capability to improve HDB, the next step should be chalking out execution plan of acquisition or equity infusion. The source and cost of financing the deal should be

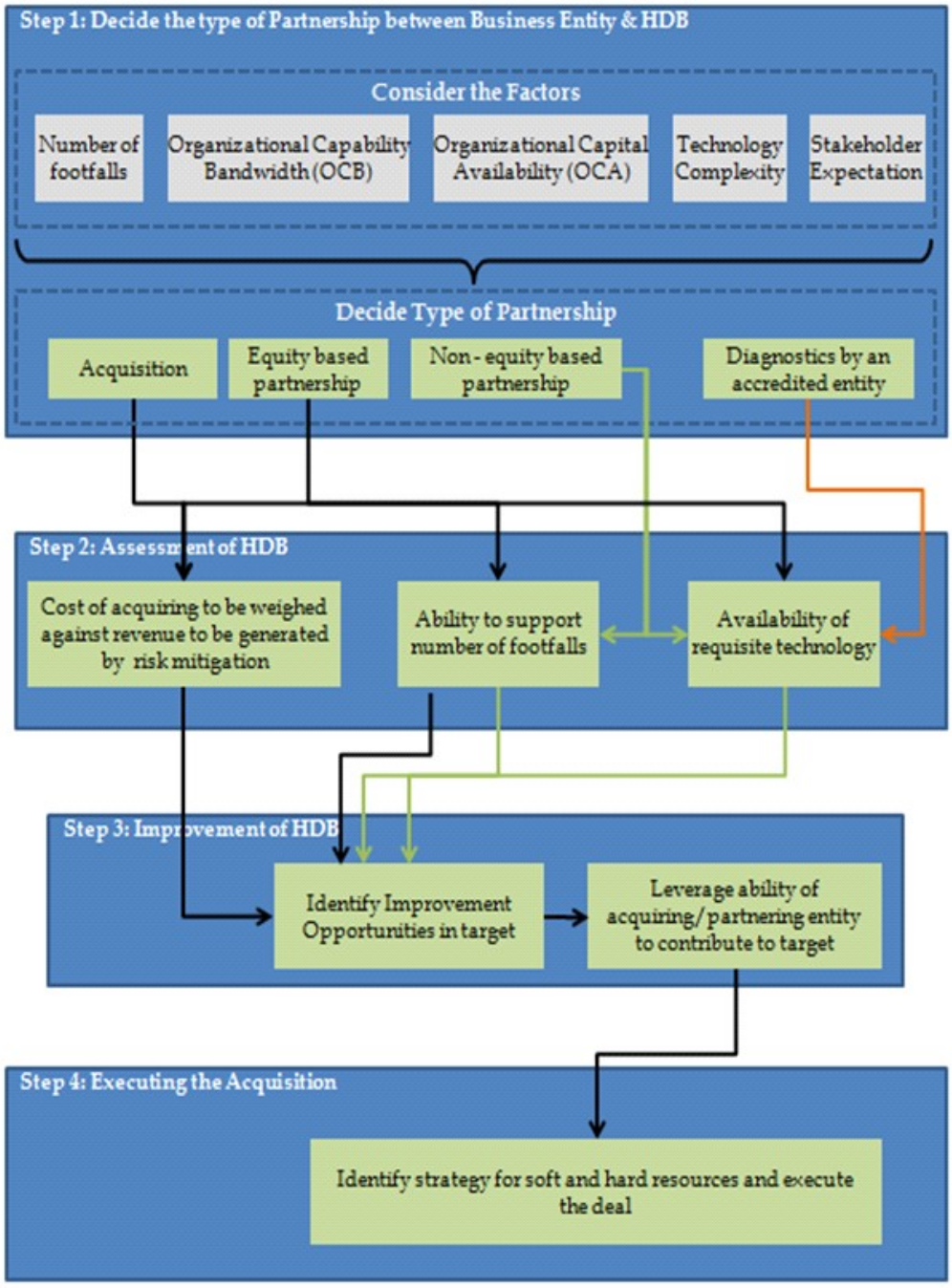
Table 4 Identification of Improvement Opportunities in Target HDB

S. No.	Factor	Remarks
1	Operational Improvement	Diagnostic processes that could benefit from economies of scale should be identified. The business entity could verify which processes could be scaled to higher number of transactions without or with marginal asset addition.
2	Amount of cash flow	An HDB that was getting low revenue and thus low cash flows in spite of available capacity would be an asset that could be improved post acquisition. Thus, managers needed to verify if there was opportunity in terms of- : Asset redeployment that entailed use assets for those products that provided better cash flow. : Scope of efficiency improvement by producing the same product, but with better efficiency to eliminate costs. : Reduction of capital maintenance and working capital investments. : Utilization of non-operating assets : Moving assets to lower tax locales.
3	Rate of discount of cash flow	Managers had to focus on scopes to reduce operating leverage. The higher the proportion of fixed costs in a firm, higher would be vulnerability to profit volatility and thus higher the financing cost. So, acquiring firm managers should verify if the HDB could be made asset light post acquisition. Such an opportunity of reducing fixed costs should be leveraged post acquisition for better cost versus benefit of acquiring the HDB. Further, managers had to create right mix of debt and equity. Debt was cheaper, partly because lenders had lesser risk compared to equity holders and partly due to tax advantages. But too much debt increased the chances of bankruptcy and thus increased interest rates for the firm. Thus, managers in the acquirer firm should study whether HDB had the right mix of debt-equity. If there was opportunity in this aspect, then HDB's capital structure should be modified so that better discount rates could be achieved to finance the HDB.
4	Duration of expected cash flow	Managers needed to identify if by deploying better technology/managerial practices, could the HDB's assets be used for longer duration and thus better value could be extracted post acquisition against the cost paid for it.

Cost of the finance should be reasonable in context of cost versus benefit of HDB.

identified. Cost of the finance should be reasonable in the context of cost versus benefit of HDB. Identification and management of the possible value potential and scopes of inter-firm conflict was required (Lee et al.,,2014).Finally, before

Fig. 2 Framework for Firm HDB Collaboration Steps



executing any collaboration or M & A, the collaborating firm or the acquirer should categorically identify which aspects of value enhancement would be leveraged by it and to what extent. Collaboration and acquisition strategy should be executed at a price point where there was higher margin still available to leverage the opportunities and bring value to shareholders post the costs of collaboration or acquisition. The recommended framework for collaboration has been depicted in fig. 2.

Conclusion

In this conceptual article we acknowledged the need of business to incorporate health diagnostics in its day to day operations during and post Covid-19 crisis event. We recommended options for partnership between business firms with Health Diagnostic Businesses (HDBs). Four options viz. acquisition, equity-based partnering, non-equity-based partnering, diagnostics with an accredited network have been identified. A set of factors was recommended based upon which managers could decide between these options. A framework has been recommended if managers decided whether to acquire or infuse equity in target HDB or to form a non-equity partnership. The framework developed provided a theoretical structure for carrying out the cost benefit comparison of HDB against the revenue it would bring in by risk mitigation. The framework recommended consideration of capacity creation of HDB expected in future against the current costs of its assets. Further, the levers that could be deployed to enhance value of target HDB post acquisition was considered. A few of these levers included redeployment of assets of HDBs, better management of capital structure and prolonging the asset lives. Also, the nature of ability of collaborator /acquirer that could improve the functioning of HDB post collaboration/ acquisition was recommended to be considered.

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