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Achieving High Performance in the Construction Industry: the Case of BAM DLP the Netherlands

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Abstract
The construction industry is a significant contributor to the economic development and performance of many countries. At the same time, this industry has long suffered from low productivity, poor project outcomes and disappointing results. The construction industry is therefore in need of a quality upgrade of construction companies so they will be able to achieve better organisational results. Based on a literature review into holistic evaluation and improvement techniques suitable for a systematic appraisal of the quality of construction companies and the subsequent improvement of this quality, the high performance organisation (HPO) framework was chosen for this purpose. It was applied on a construction company in the Netherlands, to evaluate whether the HPO Framework can yield an accurate picture of the current status of this company (i.e. how far along it was towards becoming an HPO) and whether it provides useful indications for improvement. Both were the case, and in fact the outcomes of the application of the framework indicated a high degree of alignment with financial and non-financial results of the case company. As such, the HPO Framework can be designated as a potential useful technique for other construction organisations, both in the Netherlands and in other countries, to help them in their quest for achievement of higher performance.

Keywords: High Performance Organisations, Construction Industry, HPO, Organisational Capabilities

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1. Introduction

The construction industry is a significant contributor to the economic development and performance of many countries (Baker *et al*., 2021; Khalfan *et al*., 2022). The World Economic Forum estimates that total annual revenue of this industry is approximately USD 10 trillion which accounts for six percent of global gross domestic product (Ashcraft, 2022). Construction companies operate in an increasingly volatile environment because of globalisation, internalisation of markets, liberalisation of trade, deregulation, technological developments, and the rise of the knowledge economy and environmental and sustainability issues (Bakar *et al.*, 2016; Chan & Chan, 2004; Chereja, 2013; Mollaoglu-Korkmaz *et al*., 2013; Zaman, 2020).

Construction companies thus need to be well prepared and agile and flexible to react on these environmental changes. Unfortunately, the construction industry is known for its traditionalism (Clarke *et al*., 2009) and as a result has long suffered from low productivity, poor project outcomes and disappointing results (Ashcraft, 2022). Construction productivity has declined since the 1990 and has fallen 20 percent in the last decade, projects (especially megaprojects) take 20 percent longer to finish than scheduled with up to 80 percent of them going over budget through huge cost overruns of 50 to 100 percent and with disappointing quality, financial returns are relatively low and volatile causing investors to be rather cautious, and poor business management practices result in many business failures (Agarwal *et al*., 2016; Arain, 2020; Ashcraft, 2022; Balatbat & Carmichael, 2011; Miller *et al*., 2000).

The construction sector globally has been slow to adopt processes, technological and digital innovation, suffers from inadequate project planning, performance management, and supply-chain practices, and has high employee turnover because of a difficult, stressful, and sometimes hazardous work environment (Agarwal *et al*., 2016; Khan *et al*., 2020; Zulu & Khosrowshahi, 2021). In short, the construction industry is in need of an upgrade of the capabilities of construction companies. Such an upgrade requires construction companies to develop organisational capabilities to deal with the competitive environment in a way that higher performance can be achieved (de Waal, 2012b; Willer *et al*., 2016). If they do not focus on this capability development, these companies will struggle to maintain their current standing, let alone achieve better organisational performance (Khouja *et al.*, 2022). Therefore it is imperative that construction companies evaluate their current organisational capabilities and performance, so they can chart a course to improve their quality improvement and performance (Coffey, 2005, 2010; Corbett & Rastrick, 2000; Khouja *et al*., 2022; Koh & Low, 2008; Maull *et al.*, 2001; Willer *et al*., 2016).

The objectives of the research described in this article are, based on a search of the extant literature, to identify a framework that can be used by construction companies as a starting point for their evaluation and subsequent transformation to a high performance organisation, and to test the identified framework in a construction company in order to evaluate its practical applicability and usefulness to generate improvements that can lead to the desired high performance culture. The potential contribution of our research is thus twofold: theoretically, as it will expand the literature on high performance in the construction industry; and practically, as construction companies can use the identified framework in their own quest to high performance.

The remainder of this article is structured as follows. The next section discusses the results of the literature review, which is followed by a description of the high performance organisation (HPO) framework (de Waal, 2012a; de Waal, 2012b; de Waal, 2020) with which an organisation can evaluate the capabilities it needs to achieve a high performance culture. Then, the research approach and the case company are described. Subsequently, the research results are given and analysed. The article ends with a conclusion, research limitations and opportunities for future research.

2. Literature Review

The goal of the literature review was to find a framework with which a construction company can evaluate its current capabilities and performance and that generates improvements so the organisation can become a high performance organisation (HPO). An HPO is defined as an organization that achieves financial and non-financial results that are exceedingly better than those of its peer group over a period of 5 years or more by focusing in a disciplined way on that what really matters to the organization (de Waal, 2021). Average and badly performing organizations have great difficulty managing the environment as previously described for the construction industry as this context often requires new ways of working (Cozzolino *et al*., 2017). In contrast, high-performing organizations are well able to cope with a difficult and competitive environment because of their flexibility and adaptability (de Waal, 2012b). They have what is called 'organizational sustainability' (Merriman *et al*., 2016) which is the ability of the organization to viably maintain its business operations whilst not negatively impacting social or ecological systems (Smith & Sharicz, 2011).

With the search terms 'construction industry', 'construction sector' and 'construction companies' in combination with 'high performance organisations', 'high performance', 'quality' and 'performance improvement' the databases EBSCO, Science Direct and Emerald were searched. This yielded 45 potentially relevant sources. These were read through to evaluate whether the research described was aimed at improving (aspects of) a construction company. This resulted in 34 relevant sources which are included in Table 1. The column 'Holistic/specific' denotes whether the research looked into the overall performance improvement of the organisation and the capabilities needed for that ('holistic') or just into one aspect ('specific').

Table 1: Results of the literature review

Authors	Research topic	Research findings	Holistic / Specific
Androwis *et al*. (2018)	The relationship between total quality management (TQM) practices and organizational performance.	TQM practices positively affect the organizational performance, with a significant value for top management commitment, customer focus, supplier management, process control and continuous improvement.	specific
Arain (2020)	Comparison of graduate competencies for building and construction education in Saudi Arabia and	Construction, project management and business knowledge, leadership, professionalism, and communications are the most	specific

Authors	Research topic	Research findings	Holistic / Specific
	Canada.	important and desirable graduate competencies.	
Bakar *et al.* (2014)	The relationship between knowledge management and growth performance.	A positive relationship between knowledge management and growth performance.	specific
Baker *et al*. (2021)	Impacts of board gender diversity and top management team gender diversity on diversity-related human resource initiatives and work–life initiatives.	Board gender diversity is positively associated with both human resource and work–life initiatives designed and implemented to address diversity management, which in turn are positively associated with increased operating revenue and profit before tax.	specific
Balatbat & Carmichael (2011)	Evaluation of various financial measures and ratios in order to better understand the management efficiency of construction companies.	Evaluation yielded useful ratios: five asset management ratios, eight debt and safety ratios, and six cash flow ratios.	specific
Bemelmans *et al*. (2012)	Obstacles to and opportunities for increasing the effectiveness in managing buyer-supplier relationships.	Construction companies should communicate proactively with suppliers to develop closer and trusting relationships, and jointly analyse processes to reduce failure costs and improve product quality.	specific
Bhattachary a *et al.* (2020)	Link enablers of growth to performance metrics.	Capabilities for "operational and process excellence," "unique products and services," and "visionary leadership" emerged to be the higher ranked core growth enablers.	holistic (but conceptual research)
Bossink (2004)	Drivers of innovation in the construction industry.	Categories identified: environmental pressure, technological capability, knowledge exchange, and boundary spanning.	specific
Caldas & Gupta (2017)	Factors impacting the performance of mega-projects.	A list of critical factors for the success of mega construction projects.	specific
Chapano *et al.* (2018)	Effect of high performance work systems (HPWS: recruitment and selection, training and development, performance appraisal and compensation system) on project performance.	Only the compensation system has a significant association with project performance.	specific
Egbu (1999)	Management skills and knowledge for construction refurbishment.	Most important skills: leadership, communication (oral/written), motivation of others, health and safety, decision making, and forecast and planning.	holistic (but only for refurbishment companies)

Authors	Research topic	Research findings	Holistic / Specific
Khalfan *et al.* (2022)	Influence of leadership and quality culture on quality management practices and operational performance.	Leadership significantly affects quality management practices and operational performance, and quality culture significantly influences quality management practices.	specific
Khan *et al*. (2020)	The association between ethical leadership and turnover intention and antisocial behaviour.	A negative association between ethical leadership and employee turnover intention.	specific
Khouja *et al*. (2022)	Develop a competitiveness evaluation tool for construction SMEs.	A five-step assessment tool.	holistic (but for SMEs)
Limsila & Ogunlana (2008)	Influence of project managers' leadership styles and subordinates' organisational commitment on leadership outcomes and work performance of subordinates on construction projects.	The transformational leadership style has a positive association with work performance, organizational commitment of subordinates, and leadership outcomes, more than the transactional style.	specific
Lingard *et al*. (2007)	Work-life conflict.	Alternative work schedules improve construction employees' work-life balance, creating benefits for construction employees and organizations.	specific
Löwstedt *et al*. (2021)	Exploration of leadership processes.	Distinct leadership practices are of great importance for achieving high performance, but these same practices seem to preserve the status quo instead of supporting change and development.	specific
Manivannan *et al*. (2022)	Occupational stress and work-life balance.	Major work-related stressors are significantly and positively related to work interference to personal life and negatively relate to work enhancement of personal life.	specific
Mollaoglu-Korkmaz *et al*. (2013)	Influence of project delivery methods on the ability to achieve sustainability goals in construction.	The level of integration in the delivery process affects final project outcomes, particularly sustainability goals.	specific
Muhsina & Nory (2022)	Determine the applicable performance perspectives and the most fitting key performance indicators for measuring the success of construction companies.	Six performance perspectives for project performance: financial, customer; quality; project, internal processes, and environmental and safety + twenty-eight key performance inductors.	holistic (but only results, no capabilities)
Ozorhon *et al.* (2014)	Enablers and barriers of the innovation adoption.	Resistance to change, inexperience, and unavailability of advanced	specific

Authors	Research topic	Research findings	Holistic / Specific
		products were the main barriers to innovation adoption; integration of the project participants and effective leadership were enablers.	
Ozorovskaja *et al*. (2007)	Differences in construction firm cultures and top leadership styles between Lithuania and the Netherlands.	Construction firms in Lithuania strive toward more job autonomy, more external orientation, improved human resource orientation, stronger interdepartmental orientation, more of an improvement orientation in general, and a combination of transformational and transactional leadership. The Dutch firms seek firm-culture improvements only in terms of a more external and interdepartmental orientation, and use transformational leadership with some transactional style components.	specific
Raharjo *et al*. (2018)	The relationship between job design, job commitment and organizational culture with human resource performance.	Organizational Culture and job design have a significant direct effect on job commitment, and so too organizational culture and job commitment on human resource performance.	specific
Simeão & Araujo Ferreira (2022)	Analyse resilience against the COVID-19 pandemic related to the implementation level of lean construction.	A higher implementation level of the lean philosophy aligned with greater resilience to face COVID-19.	specific
Skipper & Bell (2006)	Analysis of the causal influences on the development of project managers.	Top performing construction managers had more project management experience and held more positions prior to the first project management assignment, but still had more of a need for leadership training than for project management training.	specific
Slates (2008)	Safety performance.	Safety and health programs can only be successful if program elements such as management commitment, employee involvement, hazard anticipation, hazard abatement, and training are present.	specific
Smits *et al.* (2017)	Impact of organizational experience with building information modelling on company performance.	Maturity of the information modelling implementation strategy was the only reliable predictor of time, cost and quality performance.	specific

Authors	Research topic	Research findings	Holistic / Specific
Sweis & Jaradat (2022)	Difference between the certified and non-certified ISO 9001 construction companies in terms of construction projects' performance.	ISO-certified organizations have higher mean score in project management leadership, staff, policies, project life cycle and project success.	specific
Tabassi *et al.* (2014)	The leadership style of construction leaders and the relationship between transformational leadership practices and teamwork improvement.	The level of leaders' orientation for people, their leadership style and transformational leadership qualities improve teamwork.	specific
Tabassi *et al.* (2014)	Influence of team development and compensation methods on team performance.	Team development has a significant direct and indirect impact on team performance, with group compensation having a mediating role.	specific
Toor & Ofori (2010)	Correlation of psychological capital with authenticity, leadership, and leadership outcomes.	Psychological capital correlates significantly with authenticity and transformational leadership.	specific
Van der Vlist *et al*. (2014)	The interplay between information and communication technology and competitiveness.	Firms that invest in information and communication technology enjoy a production cost advantage.	specific
Zaman *et al.* (2020)	The moderating role of high performance work systems between project sustainability management and construction project success.	Project sustainability management and high performance work systems have a significant positive influence on construction project success, with work systems having a mediating role.	specific
Zulu & Khosrowshahi, 2021)	Influence of leaders on the success of digital transformation in their organizations.	A taxonomy of digital leadership.	specific

It is conspicuous, when looking at the studies described in Table 1, that only four out of the 34 are holistic, and that even these four are not really suitable for our research as they seem not relevant (one is conceptual and thus not empirically evaluated; one is for SMEs where our case company is part of a multinational enterprise; one is for refurbishment companies which are a very special type of construction company; and one does not discuss capabilities).

It is thus clear that the current literature does not yield a suitable holistic evaluation and improvement framework. We therefore turn to an empirically validated framework, the HPO framework (de Waal, 2012a; de Waal, 2012b; de Waal, 2020). This framework has, since its inception in 2005, been extensively tested (Iqbal et al., 2022) and applied in a multitude of industries, such as agriculture (de Waal & Meingast, 2011), banking (de Waal & Frijns, 2011), universities (de Waal & Kraaijveld, 2022), insurance (Honyenuga

et.al., 2014), food (de Waal & de Haas, 2018), government (de Waal & Mulimbika, 2017) and healthcare (de Waal, 2017). The HPO framework has, however, not been tested in the construction industry. This will be done in the present study.

3. The HPO Framework

The HPO Framework (de Waal, 2012a; de Waal, 2012b) is a conceptual, scientifically validated structure (Do & Mai, 2020) which organisations can use for analysing how high performing they are and to decide which capabilities need to be strengthened in order to improve organizational performance and make it sustainable (de Waal & Goedegebuure, 2017). The framework was developed after an extensive review of 290 academic and practitioner publications on high performance. For each of the 290 studies elements that the authors indicated as being important for becoming a HPO were identified and categorized. Because different authors used different terminologies, similar elements were put in the same category. The resulting 189 categories were labelled 'potential HPO characteristic'. For each of the potential HPO characteristics the 'weighted importance' was calculated, i.e. the number of times that it occurred in the examined studies. Finally, the characteristics with the highest weighted importance were considered the HPO characteristics. These 89 characteristics were subsequently included in an HPO survey which was administered worldwide to high, medium and low performing organisations, small and large sized, in the profit, non-profit and governmental sectors, and encompassed over 3,200 respondents. In this survey, the respondents were asked to indicate how well they thought their organizations were performing as to the HPO characteristics (on a scale of 1 to 10) and also how the results of the organization they worked at compared to those of peer groups. The data of the respondents was statistically analysed (de Waal, 2012a, 2020), yielding five factors all correlated with competitive performance.

The five HPO factors are (in Appendix 1 the HPO characteristics are listed):

- *Continuous Improvement and Renewal.* An HPO compensates for dying strategies by renewing them and making them unique. The organization continuously improves, simplifies, and aligns its processes and innovates its products and services, creating new sources of competitive advantage to respond to market developments. Furthermore, the HPO manages its core competences efficiently, and sources out non-core competences.
- *Openness and Action-Orientation.* An HPO has an open culture, which means that management values the opinions of employees and involves them in important organizational processes. Making mistakes is allowed and regarded as an opportunity to learn. Employees spend a lot of time on dialogue, knowledge exchange, and learning, to develop new ideas aimed at increasing their performance and make the organization performance driven. Managers are personally involved in experimenting thereby fostering an environment of change in the organization.
- *Management Quality.* Belief and trust in others and fair treatment are encouraged in an HPO. Managers are trustworthy, live with integrity, show commitment, enthusiasm, and respect, and have a decisive, action-focused decision-making style. Management holds people accountable for their results by maintaining clear accountability for performance. Values and strategy are communicated throughout the organization, so everyone knows and embraces these.

- *Employee Quality.* An HPO assembles and recruits a diverse and complementary management team and workforce with maximum resilience and flexibility. Employees are encouraged to develop their skills to accomplish extraordinary results and are held responsible for their performance, as a result of which creativity is increased, leading to better results.
- *Long-term Orientation*. An HPO grows through partnerships with suppliers and customers, so long-term commitment is extended to all stakeholders. Vacancies are filled by high-potential internal candidates first, and people are encouraged to become leaders. An HPO creates a safe and secure workplace (both physical and mental), and dismisses employees only as a last resort.

The HPO research shows that there is a direct and positive relationship between the five HPO factors and competitive performance: the higher the scores on the HPO factors (HPO scores), the better the results of the organization, and the lower the HPO scores the lower the competitive performance. An organization can evaluate its HPO status by performing an HPO Diagnosis. This diagnosis consists of having management and employees fill in an HPO questionnaire, containing questions on the 35 HPO characteristics with possible answers on an absolute scale of 1 (very poor) to 10 (excellent), and then calculating the average scores on the HPO factors. The scores then provide the attention points where the organization has to take action to improve in order to become an HPO.

4. Research Approach

For this exploratory study a qualitative approach in the form of a descriptive case study was used. Exploratory research is an unstructured research design to gain information on the studied phenomenon. A descriptive case study describes, based on observing, collected data and reporting, the situation of an organisation. The case study format makes it possible for researchers to directly interact with people in the organisation in its natural setting, with the means of interviews, which leads to greater understanding (Yin, 2009). Qualitative research aims to attain in-depth understanding of a phenomenon, in this case the applicability of the HPO framework at a construction company (Patton, 1987). Qualitative research is suitable when there is insufficient theory and literature on the topic to be researched (Yilmaz, 2013). In this case extensive research has been done on the development and application of the HPO framework, but not in the construction industry. In this study, semi-structured interviews are used (Yilmaz, 2013). The case organisation in this research was a business unit of a construction multinational, based in the Netherlands.

The primary data was collected using the HPO questionnaire (74 percent response rate), followed by seven semi-structured in-depth interviews at the organisation, using an interview guide (Zikmund et al., 2004). In-depth interviews give interviewees the opportunity to freely express themselves in sharing information and giving their perceptions of issues that could be helping or hampering achieving high performance at their organisation (Pole & Lampard, 2002; Rabionet, 2011). The interviewees were interviewed at the company's premises. Respondents comprised of the manager and six employees of DLP. Each respondent had a deep level of understanding of the business unit's processes as they had been with the company for a long time, which underpins the

credibility of the data. Notes were taken during the interviews. Subsequently, the data from the interviews were transcribed and analysed thematically (Huberman and Miles Matthew, 2002).

4.1. The case company: BAM DLP

BAM DLP is part of the BAM Netherlands division of the Royal BAM Group. BAM Group mainly focuses on the construction & infrastructure market in the Netherlands, the United Kingdom and Ireland, and offers a broad range of services in the field of non-residential construction, mechanical engineering, electrical engineering, real estate development, civil projects, rail infrastructure, digital design and engineering, industrialization, circularity, modularity, energy transition and new technologies. BAM Group had in 2021 approximately 16,000 employees, while BAM DLP has 31 employees and flex workers (i.e temporary hired workers). BAM DLP is responsible for the implementation and supervision of working in contaminated soil. The organisation employs professionals with operational knowledge and experience in the field of environment & soil, safety, quality assurance and enforcement. BAM DLP ensures that the BAM business units, who are executing the construction projects, remain in compliance with regard to laws and regulations when working with contaminated soil. BAM DLP is independent of BAM's line organisation and therefore is able to intervene where necessary. BAM DLP is strong in the field of process control and was in 2019 the first organization in the world to achieve Step 5 (highest level) of the Safety Culture Ladder. BAM DLP is a flat organisation, consisting of only three layers: the management team, formed by two managers; the project planners and project leaders, who prepare the projects and provide support and assistance to the projects; and the specialists, who are on site and support the project teams of BAM and subcontractors working on the constructions in contaminated soil.

The reasons for BAM DLP to undertake an HPO diagnosis can be traced back to its origin. From its establishment in 2014 the organisation was set up using the lean philosophy, leading towards achieving the highest step of the Safety Culture Ladder. This ladder is an assessment method for measuring safety awareness with as goal to promote a conscious safe and healthy culture and behaviour in companies. The ladder fosters an environment in which all organisational parties consciously shape safety in order to reduce the number of unsafe situations and thus incidents which would have resulted in absenteeism and damages. The Safety Ladder consists of five steps of increasing sophistication: 1. Shared Values. 2. Leadership Involvement. 3. Continuous Learning. 4. Accountability. 5. Constant Support.

The ladder provides, per step, the requirements that an organisation has to comply with, the accompanying criteria (the standards), how these criteria are valued (the scores), and what the independent auditors pay attention to when evaluating the safety step an organisation has achieved. When BAM DLP reached Step 5 in 2019, as first organisation in the world, its managers looked for a new challenge, a new benchmark to measure DLP up against. They chose the HPO Framework as this framework matched with the continuous improvement and strive for excellence that characterised BAM DLP’s vision and mission. Another motive was the fact that the Safety Culture Ladder was not scientifically developed and validated, and DLP’s managers wanted to know whether Step 5 actually, as logic dictated, matched with being a high performance organisation;

something which could be evaluated with the scientifically validated HPO Framework (in Appendix 5 the HPO characteristics are denoted which support the Safety Culture Ladder).

5. Research Results and Analysis

Figure 1 depicts the results of the HPO Diagnosis at BAM DLP, compared to the average HPO score for all respondents in the HPO database (in which all HPO data is collected) who work for construction companies worldwide, and to the threshold value for an HPO organisation (this value is 8.5, see de Waal, 2012b). In Appendix 1 the detailed scores for the HPO characteristics are given.

Figure 1: Results of the HPO Diagnose at BAM DLP

	Management Quality	Openness & Action Orientation	Long-Term Orientation	Continuous Improvement & Renewal	Employee Quality
HPO (AVG=8,5)	8,5	8,5	8,5	8,5	8,5
BAM DLP (AVG=8,5)	8,7	8,3	8,6	8,1	8,6
Construction companies (HPO database; (AVG=7,1)	7,3	6,8	7,5	6,7	7,2

Figure 1 shows that in terms of the HPO profile (i.e. the shape of the graph), BAM DLP is a typical construction company but of a much higher level. In fact, the average HPO score of BAM DLP denotes the company as a high performance organisation. This also shows in the results the organisation achieves:

- it has the highest scores in the whole of BAM on the Employee Satisfaction Survey
- subcontractors, when asked, prefer to work for BAM DLP over working for other construction companies
- achieved, as first organisation in the world, the highest certificate (Step 5) on the Safety Culture Ladder
- no instances of absenteeism because of accidents (i.e. no lost time incidents) since the start of DLP
- no enforcement incidents, causing law enforcement agencies to use BAM DLP as an example for the industry
- financial stable results since the start of DLP.

5.1. HPO examples

During the interviews several examples were discussed that illustrate the high scores on various HPO characteristics.

- *Characteristic 1*. BAM DLP has a clear structure with a clear vision what it wants to achieve now and in the future and a clear strategy detailing how it wants to achieve its goals. The main focus of BAM DLP is on safety and compliance with soil and environmental legislation: promoting and nurturing this on the various BAM construction sites. Next to this customer and employee satisfaction are very important. The vision and strategy are shared with the employees and subsequently discussed with them four times per year, during the quarterly meeting. There is also a clear follow-up to the strategy, for example employees are sent on safety trainings during the year.
- *Characteristics 2/3/4*. There is a procedure to easily report problems in a process or process improvement ideas. In addition, DLP's people use WhatsApp (on site) and Teams (in the office) frequently for continuous communication, discussion, problem solving, questions, improvement ideas and giving compliments. These two applications are the 'lifeline' of DLP. Every quarter the improvement ideas are jointly discussed and decided upon whether they should be taken up or not. Subcontractors are invited to participate in these discussions, to get more input. This way the processes are becoming increasingly efficient. During the day-to-day work all site personnel is invited to make an inspection of the site to look for problems or opportunities for improvement. These are immediately discussed with the BAM unit that is responsible for a particular site.
- *Characteristic 9*. BAM DLP employees and flex workers are considered to be the capital of the unit and therefore the managers take great care of them. They have regular conversations with each employee, about work and private matters. There is also immediate follow-up if actions come out of these talks (for example coaching, training).
- *Characteristic 11*. The opinions and input of employees is regularly asked by the managers, using the WhatsApp application. For example: the forthcoming Dutch Environment Act promises much change for BAM and employees are involved in developing an action plan for it.
- *Characteristic 12*. BAM DLP's motto is: "Making mistakes is allowed, but not tolerated." This means that when mistakes are made, people need to learn from it, as making the same mistake will not be allowed. When mistakes are made, they are discussed in the group and actions are devised to make sure they will not happen again. The focus is not on blaming and shaming but on a good conversation and learning. At least 80 percent of the group has to believe that the action will solve the problem, otherwise it will not be accepted nor put in action, in fact the search for a better action will then continue.
- *Characteristics 15-25*. The two managers of DLP are very different but complementary people who each have different strengths and because of this can deal with many issues in the organisation. What characterises both is that they stand up for their team and always back up the employees, especially in difficult situations such as a specialist stopping the work on a construction site because of safety issues while there is a lot of pressure (financial, time, psychological) from the client or subcontractor to continue with the work.

- *Characteristic 26*. BAM DLP has the 'Golden Sink' which is handed out to an employee, flex worker or client who performs excellently on safety. This award is not meant to be a motivation for doing safety, it is mainly to make people aware that safety is important. The 'Golden Sink' is awarded by a critical selection team so that the award is not seen as a trifle.
- *Characteristic 28*. The training (knowledge) and development (skills) needs and wishes of each employee is entered yearly in a system called BAM People. Management also pushes employees to follow certain training courses which are important for DLP and for the development of the individual him/herself (within DLP or the wider BAM organisation or even externally).
- *Characteristic 30*. One of DLP's managers is a member of many external committees to make sure that DLP is always aware of what is going on with stakeholders and to bring in the opinion and ideas of DLP. DLP also closely works together with the environmental services department of municipalities to improve processes and outputs. Regarding subcontractors, DLP employees are very accessible to them and always willing to answer questions or deal with bottlenecks. In this way close cooperations with subcontractors has been established. External people, from the subcontractors and stakeholders, are often invited to participate in DLP's meetings to have a dialogue about issues and ideas. Vice versa DLP's people regularly visit subcontractors and stakeholders premises to become familiar with their cultures.
- *Characteristic 34*. BAM DLP has created, according to the employees, a professional family culture in which they feel very safe. Family culture means that people treat each other as human beings; professional means that people are held accountable for their behaviour and results (but in a nice and professional manner). New employees express a feeling of being welcomed with open arms. DLP also does a lot to foster social safety: financial support for people in financial difficulty, emotional support (in the shape of coaches) for employees with a burnout or too much stress, focus on healthy living (support with quitting smoking, healthy life style programs), and providing conversation training to discuss social safety.

5.2. Attention points

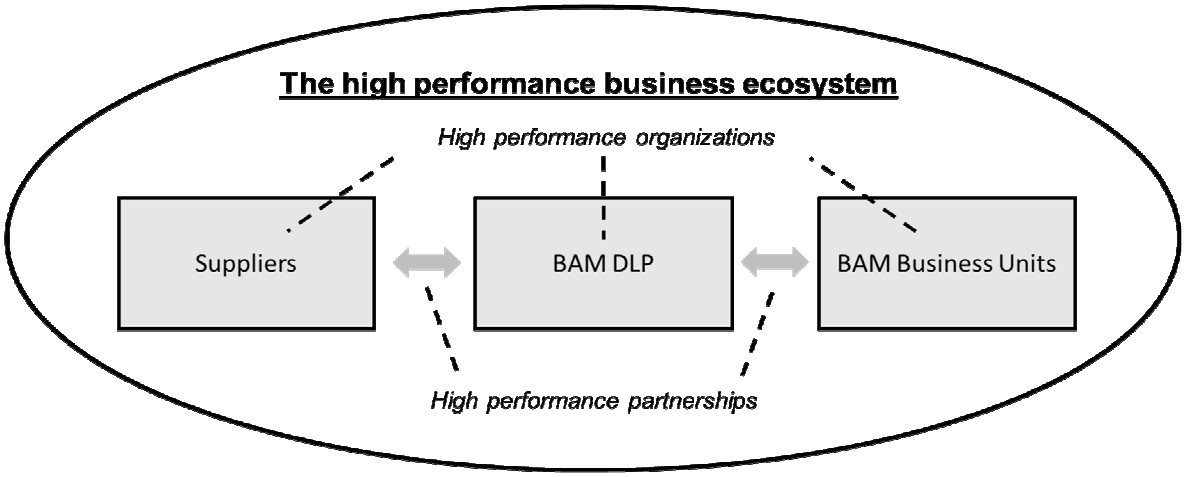
Looking into more detail, its becomes clear that actually BAM DLP has achieved the HPO status on three of the HPO factors, on the other two factors the organisation is close. This has as consequence that the organisation has to work both on the NOW (to become a 'full-blown' HPO i.e. achieve at least 8,5 on *all* HPO factors) and the FUTURE (to perpetuate the HPO status, i.e. become future-ready). Based on the HPO scores and the information obtained during the interviews three attention points have been identified, two for the NOW and one for the FUTURE. In addition, the strong points of the organisation have also been recognized. These strengths can be used by the organisation when working on the attention points. The strengths are: BAM DLP is well organised and has its affairs well in order, the organisation can be characterised as having a human and professional family culture, both the subcontractors and the other BAM business units (for which BAM DLP works) are happy with BAM DLP, the organisation is increasingly recognised within the larger BAM as an important and useful unit, there exists a strong improvement drive, there is a lot of room for personal development of employees, and these are happy and satisfied with their management.

Attention point 1 (NOW): Achieve the HPO level for all HPO factors
In order to become a 'full-blown' HPO for organisational areas need to be strengthened:

- *Strengthen process improvement & innovation*. This can be accomplished by promoting the generation of bottom-up ideas from employees; determine the room for experimentation and the allowed margin of error (thus removing the mental pressure on employees created by the uncertainty about what is allowed and what not), providing regular training in the DLP way of working and DLP behaviour (to new employees, externals, refresher); and planning specific room (time and budget) for improvement and innovation activities.
- *Improve the information provision in the organisation*. This entails streamlining the information regarding projects, and considering a contact person per region who is physically present in the region (so that employees can have easy access to that person to discuss issues).
- *Strengthen knowledge exchange*. This can be achieved by regularly organising knowledge sessions (internal people with external subcontractors, office people with people in the field) in which DLP strategic and status information is provided and people can get into a dialogue about developments, bottlenecks they encounter during their (field) work, and exchange ideas for improvement. In addition, regular intervision sessions (especially with people in the field) can be conducted to, in a structured way, learn from each other.
- *Increase people involvement*. Here it is advisable to determine the joint decision-making space (to what extent employees are allowed to participate in decision-making), not making a difference in treatment between office and field service people, and as DLP managers and office employee being more often physically present on the field sites (to interact more with the field service people).

Attention point 2 (NOW): Evolve into a High Performance Business Eco-system
As DLP is working for the other BAM business units its main focus is to get more recognition and full adoption in the wider BAM organisation. This needs constant attention as DLP could still be seen as a nuisance that holds up the energetic execution of projects, which is driving up costs. In addition, DLP wants to increase the effect of its activities on projects and by this reduce safety risks for the other BAM business units. The best way to achieve this is to create a high performance business ecosystem (de Waal, 2023) in which all parties work together to achieve high performance in the complete value chain and in which DLP is the lead organisation (see Figure 2). Being lead organisation means that it can set the quality standards in the complete value chain and work closely together with the other parties in that chain to achieve and maintain these standards. This will increase the reputation of DLP within the larger BAM organisation (even) more and guarantee its place in the organisation and the construction projects it executes.

Figure 2: The high performance business ecosystem of BAM DLP



Attention point 3 (FUTURE): Make DLP future-ready so it can maintain the HPO status
Several activities are recommended to strengthen DLP in a way that its future can be secured:

- Discuss with and involve employees in the construction of DLP's vision for the future (taking into account, among other things, the forthcoming Dutch Environment Act).
- Apply the plan-do-check-act (PDCA) cycle to the assessment and development of all employees.
- Work proactively on the development of employees and set up succession planning.
- Implement a mentor program, buddy system, and master/apprentice program, to support current and new employees

Finally, recommendations were given to DLP's management how to proceed with the results of the HPO Diagnosis:

- As DLP management think over and discuss the diagnosis results. After that, convey the HPO diagnosis results to the employees during the quarterly meeting and immediately discuss these results on its implications for DLP and the employees. Do not forget to involve the main subcontractors in the feedback and discussions.
- Divide the responsibility for the attention points among both managers, so there is accountability for their progress.
- Determine the actions for each attention point jointly with management and employees, choose priorities and divide the prioritized actions among the people.
- Execute the actions and hold a review/preview session every quarter, to evaluate progress and decide on the way forward.

5.3. Reaction on HPO Diagnosis

A few months after the diagnosis the lead author asked for a reaction of DLP's management and employees on the usefulness of the HPO Diagnosis. This was the reply: "The analysis of BAM DLP on every playing field is very important to show the strengths and the weaknesses of the organisation. In order to grow as an organisation this insight is needed. In fact, the HPO Diagnosis aligns very well with the vision of BAM DLP to be an excellent organisation, and the attention points help the organisation to dot the i's and cross the t's to make sure that all important issues get attention. In addition, it

is very nice to see that us achieving Step 5 of the Safety Culture Level is not a coincidence but aligns with DLP being an HPO. And it has opened our eyes on several points, for instance the fact that employees want to be informed about the financial results of the organisation while management thought it was not necessary to burden them with this information. The given attention points are the areas BAM DLP knows it can show organisational growth and is in fact in the process of doing so. At the same time the processes that are on a high quality level need to be kept as high or even higher. With the intrinsic safety and health motivation of the employees, and armed with the outcomes of the HPO Diagnosis, we are sure that BAM DLP will be able to maintain its high level of quality in the future."

6. Conclusion, Limitations, and Future Research

The objectives of the research described in this article were to identify a framework that can be used by construction companies as a starting point for their evaluation and subsequent transformation to an HPO, and to test the identified framework in a construction company in order to evaluate its practical applicability and usefulness to generate improvements that can lead to the desired high performance culture. The results of the case study at BAM DLP clearly indicate that these objectives have been achieved. Not only the HPO Framework turned out to be applicable at this construction company, yielding a good and accurate picture of the current status of the case company. It also yielded attention points with which the organisation can further improve and strengthen itself. In addition, a match could be made between the company achieving the highest level of the Safety Culture Ladder and its high level of performance, indicating that the two are correlated. Thus the contribution of the research is both theoretical, as it expands the literature on high performance in the construction industry; and practical, as construction companies can use the HPO Framework in their own quest for high performance.

There are several limitations to our study, which in themselves provide opportunities for future research. Inherent in case study research is that only one organisation was involved and thus the research results cannot indiscriminately be generalised for the construction industry. More research with the HPO Framework and HPO Diagnosis needs to be conducted in this industry to achieve this. In addition, BAM DLP is a small organisation, and thus it would be useful and informative to repeat the research in larger construction companies, and in other parts of BAM itself. As an extra research opportunity, the HPO Framework could be studied in other cultural settings than the Dutch culture to evaluate whether national culture makes a difference. Longitudinal research could be of interest, to see whether the identified attention points indeed help BAM DLP to stay an HPO (and possible even increase the HPO scores). Finally, the Safety Culture Ladder could be expanded with criteria that cover the HPO characteristics that are at this moment not included in the Ladder (see Appendix 1), to increase the worth of the Ladder for construction companies.

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APPENDIX 1: HPO Factors and Characteristics

This appendix gives the scores of BAM DLP for the HPO characteristics. It also indicated which HPO characteristics support the Safety Culture Ladder (the X's in the last column).

HPO factors/characteristics (= capabilities)	Score	Safety Culture Ladder
Continuous Improvement and Renewal		
1. The organization has a strategy that sets it clearly apart from other organizations.	8,4	X
2. Processes are continuously improved.	8,3	X
3. Processes are continuously simplified.	8,2	X
4. Processes are continuously aligned.	8,0	X
5. Everything that matters to performance is explicitly reported.	8,5	X
6. Both financial and non-financial information is reported to managers and employees.	7,1	X
7. Core competencies are continuously innovated.	8,0	
8. Products, processes, and services are continuously innovated.	8,1	
Openness and Action Orientation		
9. Managers frequently engages in a dialogue with employees.	8,3	X
10. Employees spend much time on communication, knowledge exchange and learning.	8,0	X
11. Employees are always involved in important processes.	7,7	X
12. Managers allow making mistakes.	8,5	X
13. Managers welcome change.	8,5	X
14. The organization is performance driven.	9,0	
Management Quality		
15. Managers are trusted by organizational members.	8,8	
16. Managers have integrity.	8,9	
17. Managers are a role model for employees.	8,9	X
18. Managers are fast decision makers.	8,7	X
19. Managers are fast action takers.	8,8	X
20. Managers coach employees to achieve better results.	8,2	
21. Managers focus on achieving results.	9,0	X
22. Managers are very effective.	8,7	
23. Managers are strong leaders.	9,0	
24. Managers are confident.	9,3	
25. Managers are decisive with regard to non-performers.	8,0	
Employee Quality		
26. Managers always hold employees responsible for their results.	8,3	X
27. Managers inspire employees to accomplish extraordinary results.	8,7	
28. Employees are resilient and flexible.	8,6	
29. The organization has a diverse and complementary workforce.	8,6	
Long-Term Orientation		
30. The organization maintains good and long-term relationships with all stakeholders.	8,3	X
31. The organization is aimed at servicing the customers as best as possible.	8,3	X
32. The organization grows through partnerships with suppliers and/or customers.	8,5	
33. Managers have been with the company for a long time.	9,2	
34. The organization is a secure workplace for both managers and employees.	8,1	
35. New managers are promoted from within the organization.	9,0	X