

# Applying the high performance organisation framework in the horticulture and greenhouse sector

André de Waal and Alex Meingast

André de Waal is Academic Director, HPO Center, Hilversum, The Netherlands, and Director, Statmind Management Research and Development BV, Maastricht, The Netherlands. Alex Meingast is based at HPO Center, Hilversum, The Netherlands.

## Summary

**Purpose** – *The Dutch agricultural sector nowadays experiences many challenges. To deal with these, the sector has been interested in finding ways to improve performance. Mostly, the improvement research has concentrated in the areas of innovation of products and quality, supply chain management, cooperatives, entrepreneurship and human resources. However, hardly any research has been done into ways to strengthen the internal organisation, encompassing the quality of management, employees and processes and systems of the agriculture company. This paper aims to address this research gap by evaluating whether the high performance organisation (HPO) framework, a scientific validated analysis and improvement technique, can be used to help agricultural enterprises to strengthen their internal organisation.*

**Design/methodology/approach** – *The HPO Questionnaire was applied at four Dutch horticulture companies to evaluate their performance. Subsequently, at each company, interviews were held to obtain more information about the scores. Then, a workshop was organised with the management of all four companies to discuss the study results.*

**Findings** – *The workshop showed that the framework was suitable for the participating companies to start improving their organisations, as management of all four companies agreed that the analysis and recommendations, derived from analysing the questionnaire data and the interviews, were highly relevant to their business.*

**Originality/value** – *As there is no holistic organisational evaluation and improvement technique which looks specifically at the internal organisation of horticulture companies, available for the agricultural sector, the application of the HPO Framework in this sector is the first of its kind.*

**Keywords** HPO, Agriculture, High performance organisation, Excellence, Greenhouse horticulture, Profit margins

**Paper type** Research paper

## 1. Introduction

The agricultural sector was selected by the Dutch Government as one of the key innovation and growth industries of the country (Lans *et al.*, 2008). This sector is characterised by (Ménard and Klein, 2004; Mulder *et al.*, 2007; Lans *et al.*, 2008, 2010; Boehlje *et al.*, 2011; Verhees *et al.*, 2012; Shukla and Jharkharia, 2013):

- profit margins getting smaller because of increasing costs (specifically energy costs);
- increasing competition, amongst others, by reduced protection of agricultural markets and increased globalisation, which in turn result in geopolitical issues (like a few years ago Russian borders being closed for Western agriculture products);
- company sizes increasing to achieve economies of scale and obtaining enough financial power to be able to invest in capital and knowledge-intensive innovation such

The authors thank Arcadia, CombiVliet, Rabobank, Redstar and Ter Laak Orchids for organizing and participating in this research and Dr Emiel Wubben of Wageningen University for his review of the initial research results.

Received 22 May 2016  
Revised 2 August 2016  
17 January 2017  
Accepted 22 January 2017

as logistical techniques, energy-saving technologies, process technologies and production and harvesting techniques;

- changing consumer habits, resulting in product life cycles getting shorter and product demand getting more unpredictable;
- enhanced environmental regulations, sustainability issues and new requirements for product quality and food safety; and
- increasing cooperation through better supply chain management, both horizontally between producers and vertically between producers, distributors and clients.

Based on these characteristics, [Boehlje et al. \(2011\)](#) formulated three critical future issues for the sector: decisions must increasingly be made in an environment of risk and uncertainty; technology and new innovations have to be developed and adopted to ensure long-term financial success; and quick responses to changes in industry and the competitor landscape are needed to maintain market position. To deal with the aforementioned issues, the agricultural sector has been interested in finding ways to increase performance under challenging conditions ([Mugera, 2012](#)). The improvement research in the sector has mainly been concentrated in the areas of innovation of products and quality, supply chain management, cooperatives, entrepreneurship and human resources. No research can be found in the current literature into ways to strengthen the internal organisation – encompassing the quality of management, employees, processes and systems of the agriculture company – with the noted exceptions of [Bremmer \(2004\)](#), who looked at the strategic decision-making process in horticultural companies, and [Trip \(2000\)](#), who investigated the decision-making process of flower producers. In this paper, we address this gap in the literature by evaluating whether the high performance organisation (HPO) framework, a scientific validated analysis and improvement technique, can be used to help agricultural enterprises strengthen their internal organisation. From previous research ([de Waal, 2012a, 2012b](#)), we know that increasing the strength of the internal organisation will help an organisation to become high performing. We applied [de Waal's \(2012a, 2012b\)](#) HPO Framework at four Dutch greenhouse horticulture companies. We limited ourselves to greenhouse horticulture, as this was exploratory research and therefore of necessity limited to a subfield of the agricultural sector. Our research question was therefore:

*RQ1.* Can de Waal's HPO Framework be applied in the horticulture and greenhouse sector to evaluate the performance of horticulture and greenhouse companies and to come up with relevant recommendations for improvement?

With this research, we aim to help owners and managers of agricultural companies, and specifically greenhouse horticulture companies, by identifying ways to create HPOs which will yield better performance not only for the individual companies but also for the aggregate supply chain.

The remainder of this article is structured as follows. In the next section, a literature overview is given of improvement methods applied thus far in the greenhouse horticulture sector. After this, the HPO Framework is introduced. This is followed by a description of the research approach and of the case companies where the research took place. Subsequently, the results of the research are given and analysed. The article ends with a conclusion, practical implications, limitations to the research and possibilities for future research.

## 2. Literature overview

In the agricultural sector, greenhouse horticulture plays an important role: up to 2.5 per cent of total Dutch exports and 18.4 per cent of total agricultural exports by value in 2011 comes from it ([Leeuwen et al., 2014](#); [FAOSTAT, 2015](#)). The greenhouse horticulture sector consists

of three major groups: vegetables (approximately 40 per cent of the total greenhouse area), cut flowers (around 40 per cent) and pot and bedding plants (below 20 per cent), which together accounted for almost 5,000 businesses in 2013, down from approximately 11,000 companies in 2000 because of the scale increase in agri-businesses (LEI Wageningen, 2014; CBS, 2015). Two-thirds of these businesses deal with flower production, while one third is vegetable production (Lans *et al.*, 2008), although the percentage of flowers is decreasing while, especially, the production of tomatoes is increasing (LEI Wageningen, 2014). Greenhouse horticultural companies are defined as companies that are primarily dependent on the practice of cultivating and growing crops as their main source of income (McElwee, 2008). Research into improvement methods for greenhouse horticultural companies has thus far been concentrated on the following areas:

- *Innovation of products and increasing product quality:* This is mainly driven by two causes. Governments are increasing the quality requirements regarding the production of crops, and customers are demanding higher quality, environmental friendly and safe products with a longer shelf life. These demands can be met by investing in quality improvement and innovation in the entire supply chain (Aramyan *et al.*, 2007; Snijders *et al.*, 2007; van der Spiegel, 2004).
- *Supply chain management:* Agri-food supply chain management includes the collection of processes from production to delivery of agricultural products such as fruits, flowers and vegetables. The aim of agri-food supply chain management is to “efficiently integrate suppliers, manufacturers, warehouses and stores, so that merchandise is produced and distributed at the right quantities, to the right locations, and at the right time, in order to minimize system-wide costs while satisfying service level requirements” (Simchi-Levi *et al.*, 2008, p. 1). Increased globalisation has made efficient supply chains even more important as agricultural products now have to be delivered worldwide in time and in the right variety and quantity according to the wishes of local customers. Those agri-food companies that are part of efficient supply chains, in which partners trust each other to do the right thing for the chain, see their performance increase considerably (Matopoulos *et al.*, 2007; Sporleder and Boland, 2011; Dentoni *et al.*, 2012; Fischer, 2013; Shukla and Jharkharia, 2013).
- *Cooperatives:* Collaborative or network organisations, such as cooperatives, have always been important in agriculture. These cooperatives created concentrated distribution and sales networks, often in the shape of auction houses, which made these processes much more efficient. At the same time, tension was created with the growers who often wanted to receive more for their products and wanted to pay less to the auction houses (Ménard and Klein, 2004). In a reaction to this tension, agriculture companies started to take marketing and sales in their own hands at the expense of the central cooperative (Snijders *et al.*, 2007).
- *Entrepreneurship:* Entrepreneurial competencies are seen as increasingly important for agriculture company owners and managers to be able to deal with the aforementioned challenges. As a result, there has been a lot of research into the entrepreneurial competences these owners and managers need and how these can be developed (Mulder *et al.*, 2007; Lans *et al.*, 2010; Verhees *et al.*, 2012). Strengthening these competences can help agriculture companies increase their performance (de Lauwere, 2005, Verhees *et al.*, 2011).
- *Human resources:* In recent years, the agricultural sector has become a less-preferred career option for young people. As a result, a shortage of skilled workers is foreseen. In the production process, this is already the case; hence, many foreign workers are employed by agricultural companies. But now, also in managerial levels, it is increasingly difficult to attract and retain the right people. Where in the past youngsters from grower families would naturally choose agriculture, nowadays, they have many

more options. In addition, many flex workers who are paid fairly low wages do not signal an industry where one can earn a high salary. At the same time, the current workforce needs to be retrained as the aforementioned circumstances ask for a more flexible and multi-skilled workforce that possesses critical thinking skills, has good communication and good teamwork skills and consists of creative thinkers. Therefore, human resource management (HRM) plays an increasingly important role in agricultural companies (Noela and Oenanib, 2013; Snijders *et al.*, 2007; Muger, 2012; Claire *et al.*, 2014).

Muger (2012) states that the economic performance of agribusiness firms is increasingly dependent upon how these firms are managed rather than how assets are owned and applied. In this light, it can be concluded that there needs to be done more research into ways to strengthen the internal organisation, encompassing the quality of management, employees, processes and systems of the agriculture company (Aramyan, 2007). In this article, we use the HPO Framework (de Waal, 2012a, 2012b), which is a holistic and scientifically validated framework for creating HPOs, to conduct this type of research. The HPO Framework is described in the next section.

### 3. Theoretical framework: the high performance organisation framework

The reason for using the HPO Framework in this research was that this framework was developed in a rigorous scientific manner (de Waal, 2006) and subsequently been shown in longitudinal research to help organisations improve their performance in such diverse industries as banking (de Waal and Frijns, 2011), retail (de Waal, 2012b), food (de Waal and de Haas, 2013), ICT (de Waal, 2012b) and media (de Waal *et al.*, 2015). The HPO framework was developed based on a descriptive literature review (Phase 1) and empirical study in the form of a worldwide questionnaire (Phase 2) (de Waal, 2006, 2012a, 2012b). Phase 1 of the study consisted of collecting 290 studies on high performance and excellence. The identification process of the HPO characteristics from this literature consisted of a succession of steps. First, elements were extracted from each of the publications that the authors themselves regarded as essential for high performance. These elements were then entered in a matrix which listed all the factors included in the framework. Because different authors used different terminologies in their publications, similar elements were placed in groups under a factor and each group – later to be named “characteristic” – was given an appropriate description. Subsequently, a matrix was constructed for each factor listing a number of characteristics. A total of 189 characteristics were identified. After that, the “weighted importance”, i.e. the number of times a characteristic occurred in the individual study categories, was calculated for each of the characteristics. Finally, the characteristics with a weighted importance of at least 6 per cent were chosen as the characteristics that potentially make up an HPO, resulting in 35 characteristics.

In Phase 2, the 35 potential HPO characteristics were included in a questionnaire which was administered during lectures and workshops given to managers by the author and his colleagues all over the world. The respondents of the questionnaire were asked to indicate how well their organisation performed on the various HPO characteristics on a scale from 1 (very poor) to 10 (excellent) and also how its organisational results compared with its peer group. Two types of competitive performance were established (Matear *et al.*, 2004): relative performance (RP) versus competitors:  $RP = 1 - ([RPT - RPW]/[RPT])$ , in which  $RPT =$  total number of competitors and  $RPW =$  number of competitors with worse performance; and historic performance (HP) of the past five years (possible answers: worse, the same or better). These subjective measures of organisational performance are accepted indicators of real performance (Dawes, 1999; Heap and Bolton, 2004; Jing and Avery, 2008). Based on the comparison scores of the respondents, the average scores for RP and HP for their organisation were calculated and related to the HPO scores as given

by the respondents for their organisation. The questionnaire yielded 2015 responses from 1,470 organisations. With a factor analysis, 35 characteristics, categorised in five factors and with both a significant and a strong correlation with organisational performance, were extracted and identified. The factor scales showed acceptable reliability (Hair *et al.*, 1998), with Cronbach alpha values close to or above 0.70.

The research yielded the following definition of an HPO: “an organisation that achieves financial and non-financial results that are exceedingly better than those of its peer group over a period of time of five years or more, by focusing in a disciplined way on that what really matters to the organisation” (de Waal, 2012b, p. 5). The five HPO factors are:

1. *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 organisation, so everyone knows and embraces these.
2. *Openness and action orientation*: An HPO has an open culture, which means that management values the opinions of employees and involves them in important organisational processes. Making mistakes is allowed and is 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 making the organisation performance-driven. Managers are personally involved in experimenting, thereby fostering an environment of change in the organisation.
3. *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.
4. *Continuous improvement and renewal*: An HPO compensates for dying strategies by renewing them and making them unique. The organisation 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.
5. *Employee quality*: An HPO assembles and recruits a diverse and complementary management team and workforce with maximum work flexibility. The workforce is trained to be resilient and flexible. They 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.

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 organisation, and the lower the HPO scores, the lower the competitive performance. The research also shows that all HPO factors need to have equal scores. An organisation can evaluate its HPO status by having its management and employees fill in the HPO Questionnaire, consisting of questions based on the 35 HPO characteristics with possible answers on an absolute scale from 1 (very poor) to 10 (excellent) and then calculating the average scores on the HPO factors. These average scores indicate where the organisation has to take action to improve to become an HPO.

## 4. Case companies

During a presentation on the HPO Framework given by the authors to a regional business club consisting of approximately 20 agricultural companies in the western part of The Netherlands, the idea was discussed to apply this framework at several members of the business club. The following goals were expressed for the research:

- It should be a mirror for the participating companies, giving an accurate picture of their current status.
- It should identify the attention points the participating companies should address to strengthen their internal organisation.
- It should set a baseline from which the participating companies could measure their progress towards HPO.
- The research results should be made available to the sector so that other agricultural organisations could learn how to strive for HPO and in the process strengthen the sector.

The research can be characterised as being exploratory by nature because, as mentioned before, there were no previous models or frameworks on which to base the contours of an HPO in the horticultural sector. After the presentation for the business club, an information session was held by the authors with eight interested companies, of which four decided to participate. As such, the research population can be seen as a convenience sample. The four companies are introduced underneath.

### 4.1 Arcadia

Arcadia grows chrysanthemums which are mainly sold in Eastern Europe and the UK. The company operates from four locations in The Netherlands which vary in size from 0.8 ha (a testing location for new varieties) to 8 ha (production). New varieties of chrysanthemums are developed, tested and taken into production from the own locations. Several of these new varieties have won trade awards. During the past years, the organisational results have steadily improved by keeping costs down and by reacting in a flexible way to local customer demands. Arcadia has 40 employees with a fixed contract, 50 employees (mainly from Poland) with a flexible contract and 15 people who work for the company via subcontractors. At each location, one of Arcadia's shareholders is in charge, thus making sure that there is always an owner present in the greenhouse and in the process, creating a flat organisational structure. In addition, each partner has a special function, such as finance, HR, energy and sales and marketing, which is being performed for the complete company.

### 4.2 Ter Laak Orchids

Ter Laak Orchids grows orchids at two locations which, combined, produce approximately six million plants in three quality classes. Central to the business of Ter Laak Orchids is sustainability: the company uses the newest production techniques and focuses on sustainable growth by reducing CO<sub>2</sub> emissions. The company is run on three main values: "We are ambitious in what we do"; "We have respect for people and nature"; and "We keep it as simple as possible". The growing process has been completely automated, as is the logistic process, which makes it possible to achieve a high delivery reliability. The company is run by two shareholders supported by a management team in each of the locations. Ter Laak Orchids has 52 employees with a fixed contract and 100 Polish employees with a flexible contract.



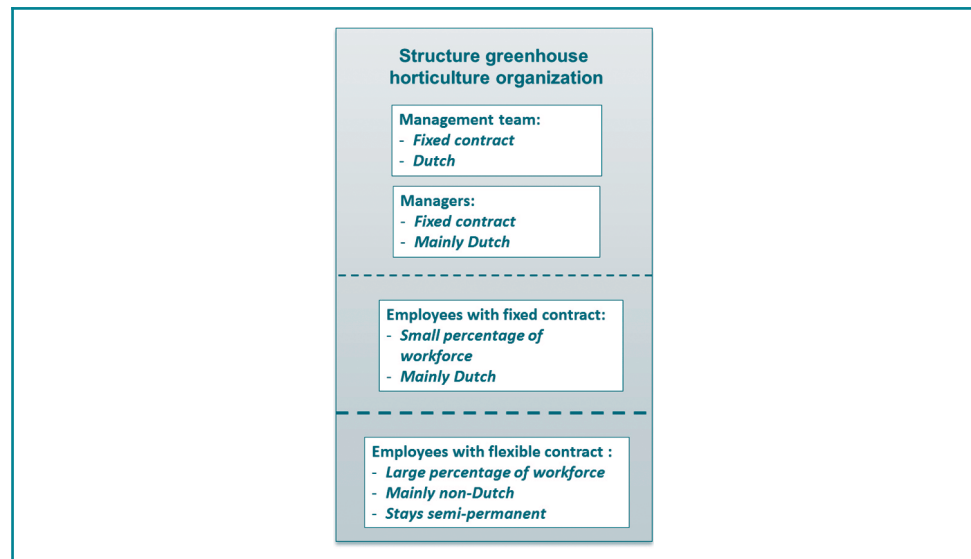
### 4.3 CombiVliet

CombiVliet produces tomatoes in various varieties, such as (plum) vine tomatoes, cocktail vine tomatoes and cherry tomatoes. The company currently operates from six locations with a total production size of 80 ha and a potential future size of an extra 60 ha. The newest production and packaging techniques are used to continuously drive cost down while simultaneously increasing product quality. Every location is run by a general manager who is responsible for all processes at the location. He is supported by a production manager who is responsible for optimal growth of the crops so that these yield maximum output. CombiVliet is run by three partners who each have a specific task they perform for the complete company: finance; personnel and sales; and cultivation and technique. CombiVliet has 80 employees with a fixed contract, and in the high season, approximately 400 employees, mainly from Poland, with a flexible contract.

### 4.4 Redstar

Redstar is a professional and innovative family company which has existed for more than 60 years and has in time developed nine tomato varieties that satisfy the highest quality requirements. The company grows, packages and sells tomatoes all year round, with a growing area in The Netherlands of almost 70 ha and another 30 ha in Spain and the UK. Redstar's core values include innovation and quality, and therefore, the company grows as organically as possible in ultra-modern greenhouses. Currently, Redstar has 114 employees with a fixed contract and 400 employees, mainly from Poland, with a flexible contract.

**Figure 1** Typical structure of a greenhouse horticulture company



**Table I** Responses per participating company

Company	Total	Questionnaires		Contract		Total	Interviews	
		Managers	Employees	Fixed	Flex		Managers	Employees
Arcadia	46	3	43	19	27	6	3	3
CombiVliet	53	25	28	39	14	7	3	4
Red Star	35	10	25	26	9	6	3	3
Ter Laak Orchids	57	10	47	45	12	7	4	3
Total	191	48	143	129	62	26	13	13

## 5. Research approach

Because we were dealing with a convenience sample, before the actual research commenced, it was first evaluated whether these four companies had anything in common. It turned out that their set-up very much resembled the set-up of the majority of the companies in the greenhouse horticulture sector, as depicted in [Figure 1](#).

In many greenhouse horticulture companies, there is a distinct difference between employees with a fixed contract and employees with a flexible contract (“flex workers”). At the top of the organisation, the management team can be found, often still consisting of the original founder(s) and/or relatives and one or more partners. These people naturally all have a fixed contract, and they all have the Dutch nationality. Close to the management team are the other managers who also have a fixed contract and are mainly from The Netherlands. In the second layer, the employees with the fixed contract can be found. In most greenhouse horticulture companies, these people form only a small percentage of the workforce, and as they are mainly Dutch, they still are relatively close to the management. In the third layer, the bulk of the workforce can be found, which consists of people on a flexible contract. As this workforce layer can be quite fluent with people drifting in and out of employment, there is quite a distance to the people with a fixed contract, especially the management, something which is not helped by the language barrier.

The actual research started by the contact person at each of the participating companies receiving the HPO Questionnaire and subsequently distributing it among managers and employees, during the period of July-August 2014. For three of the four companies, the internet version was used, while one company opted for the paper version. As all companies had Polish people working for them, the questionnaire was translated into Polish. In total, 191 completely filled-in questionnaires were received back, which constituted a response rate of 54.0 per cent ([Table I](#)).

The average scores on the five HPO Factors and accompanying 35 HPO characteristics were calculated for the four companies individually and jointly, and interview questions were drafted. Subsequently, 26 interviews were held in the period of August-September 2014, on average, six-seven per company. These interviews were conducted with management and employees of the company who were selected on the basis of having filled-in the HPO Questionnaire, availability and willingness to be interviewed, and representing a cross-section of the company. The information from the interviews and the data from the HPO Questionnaire were analysed by the authors to come up with strong points of the participating companies which should be maintained and improvement points to be addressed to strengthen the internal organisation. These points were refined after discussion with several sector experts from Wageningen University and the local Rabobank. Subsequently, the research results were discussed during a workshop with management of all four companies participating. Notes were taken during this discussion, which was also recorded on tape. The results of the HPO diagnosis, combined with the discussion with the participating companies, were turned into a draft of this paper, which was sent to the participating companies for review and approval for publication. Based on their final comments, the paper was finalised.

## 6. Research results and analysis

In [Figure 2](#), the average scores on the five HPO factors for the four participating companies are given and compared with the average scores of all the Dutch production organisations in the HPO database of the HPO Center (where the authors work). As there were no specific data in this database for the horticultural sector, the closest sector to compare to was the production sector. The shapes of the HPO graphs in [Figure 2](#) show that the sectors seem basically comparable. The detailed scores can be found in [Appendix](#).



**Figure 2** Average HPO scores for the four participating companies, compared to the Dutch production sector (data derived from the database of the HPO Center)

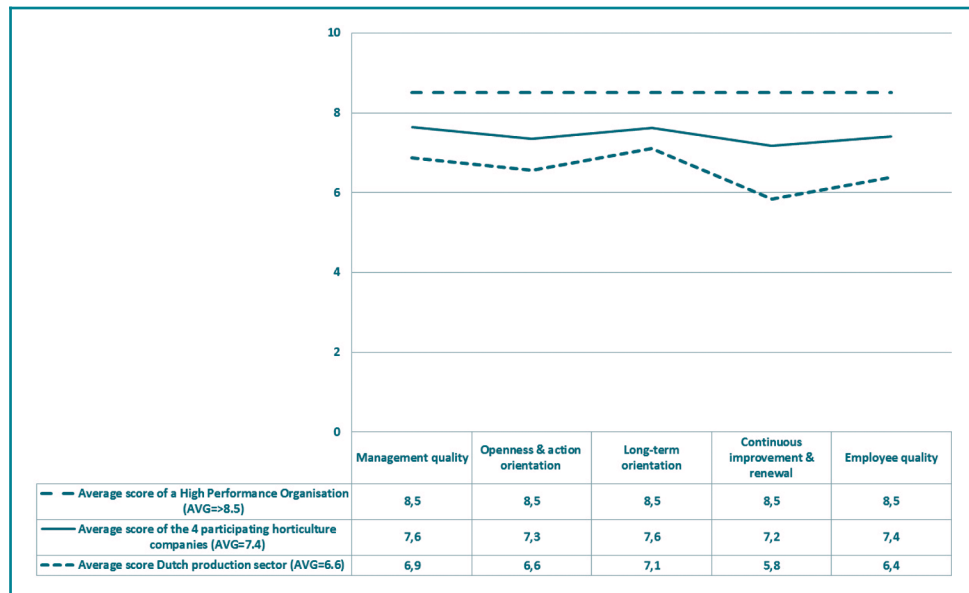


Figure 2 shows that the four participating companies together are not HPO yet, as their score is 7.2, while an HPO scores 8.5 or higher (de Waal, 2012a, 2012b). However, with a score of 7.2 (which is higher than the average of 6.6 for the Dutch production sector), it can be stated that the participating companies are performing well. The interviews with management indicated that the companies were highly product-oriented and had ambitious growth goals, but at the same time, they were afraid to run into the limitations of the current organisational set-up. During the workshop, the current situation of the participating companies was characterised as showing tension between the ambitions of the organisations, which would help these organisations to grow, while at the same time experiencing pressure from the environment, which might dampen the growth rate if not dealt with adequately. The participating companies were in a good place as they all achieved good results and had much professional knowledge. Also mutually shared was that they employed many foreign part-time workers, and their current pool of successors might not be large enough to be able to manage the expected growth adequately.

In the remainder of this section, the analysis per HPO factor is given. This analysis starts with a brief mention of the strong points which the four participating companies share, followed by what is needed to strengthen the HPO factor further. The latter is illustrated by actual quotes from the interviewees which represent the particular issue well and added to the results of the workshop discussion. This analysis has been discussed and verified with the four participating companies during the aforementioned workshop and approved by them.

### 6.1 High performance organisation factor management quality

Strong points in this factor which were identified for all participating companies were: there existed great trust in management because of its product knowledge and its commitment to the organisation; and management was naturally result-driven, which was caused by their proudness of product and company and having an inherent growth drive. The following were needed to improve and strengthen this factor:

- *Effectuate a shift in managers' attention from products to quality of employees:* Many managers, especially the owners and founders, focused on the day-to-day operations

to the detriment of higher-order management functions, as illustrated by this quote: “Basically we cannot let go of the cultivating process”. The result was less time for the development of their employees growing and hence limited growth of these employees: “Micromanaging blocks progress”. A new awareness of what it took to manage well was required: managers needed to realise that their most important task was to enable employees to excel. The workshop participants were indeed aware that coaching their people more would result in higher returns. As one of the participants expressed it: “Growing is important but more important for a manager is to have an overview of the organisation so you can put the right people in the right place”. Another suggestion originating from the workshop was to increase the self-coaching capacities of managers by organizing training sessions for higher management in which they would learn how to coach themselves and help others.

- *Create an awareness that managing was a real profession that must be practiced well.* This awareness should lead to managers developing their coaching skills and bringing in HR professionals who will get a seat at the management table. This would ensure that people issues would get sufficient attention and that employees no longer needed to ask themselves for initiatives from HR: “Evaluation meetings only take place when you ask for them”. As the participants of the workshop acknowledged, “The bigger the company the more difficult it is for especially the owners to keep contact with employees and give them dedicated attention”. Therefore, it was necessary to get professional support to deal with HR issues adequately and quickly. The bigger companies either had this HR support already or were in the process of installing it.
- *Determine the level of interaction needed between management and employees with a flexible contract (see Figure 1), to establish how important these employees were for creating an HPO:* Quite a few managers had an attitude of “These flex workers are only here to earn money”, and thus regarded them as expendable and not loyal. However, it does not make sense to put the future of the company in the hands of people who were regarded as the least committed. In fact, they were very important to the success of the enterprise and should accordingly receive more attention and respect in such a way that these flex workers would also start to feel part of “the family”, as the workshop participants put it. Unfortunately, there were limited opportunities for promotion; however, there were possibilities for job rotation for a small group of high performers.

## 6.2 High performance organisation factor openness and action orientation

Strong points in this factor which were identified for all participating companies were: they were action-oriented organisations whose management stayed closely involved in the operations and thus were able to deal quickly with issues; and they were always eager to learn new ways to improve and therefore regularly participated in studies or meetings aimed at improvement. The following were needed to improve and strengthen this factor:

- *Determine how the employees on a flexible contract could be involved in organisational developments to get their ideas for improvement.* Often, only the Dutch-speaking employees with a fixed contract were asked for their opinions, as this quote illustrates: “There is a clear distinction in how management involves people with a fixed and people with a flexible contract, and also between Dutch people and foreigners”. However, these flex employees also possessed potentially valuable knowledge and experiences which could be helpful in dealing with issues or coming up with new ideas. During the workshop, it was stressed that this issue did not mean that everybody in the organisation had to be involved in everything; it meant that management should consciously think beforehand who of the fixed contract employees *and* flex workers should be informed and involved about an action before that action was taken. A guiding principle was to evaluate if the information and action would help a person to perform better, if yes, then that person should be informed about and involved in an

action. In particular, looking at the various locations that the participating companies operated from, management should divide the information in a “nice to know” category which other locations did not necessarily need and the “must know” category which was information which could help the other locations to perform better.

- *Create “space” in the agenda of managers so that they could regularly go into the greenhouse to keep on top of things, to notice problems and opportunities for improvement and to get new ideas by observing and talking to the people in the green house:* The regular presence of managers on the work floor would also have a motivating effect as employees liked the opportunity to talk to them: “Because of the growth, we see management less and less on the work floor”.
- *Pay more attention to the contribution of the flex workers:* “Flex workers often don’t feel heard or seen” and “The culture and language of the flex workers are so different that managers often cannot be bothered to establish contact”. The cultural and linguistic barriers between these flex workers and the (mainly) Dutch management had to be removed, which could be achieved by using the Dutch-speaking foreigners as intermediaries. Another method was to invite groups of employees (both fixed and flex) for coffee with management to start a dialogue.

### 6.3 High performance organisation factor long-term orientation

Strong points in this factor which were identified for all participating companies were: they were highly customer-oriented, and they created a safe environment in which people wanted to stay for a long time. There was one issue which needed attention to improve and strengthen this factor: to create a pool of potential successors for the current-day management. This pool was needed to guarantee the continuity of the management of the organisation and to be able to cope with the (projected) growth. The high potentials in the company already acknowledged the importance of this pool: “By attention for my development and by giving me more training I can function on a higher level which is good for me and the company”.

### 6.4 High performance organisation factor continuous improvement and renewal

Strong points in this factor which were identified for all participating companies were: there was no shortage of ideas and initiatives for improvement (especially in the production area), and the fixed contract employees in general were sufficiently informed about the situation of the organisation. The following were needed to improve and strengthen this factor:

- *Distinguish between “fighting fires” and “fundamental organisational improvement and renewal” when allocating time and resources, as the latter was in danger of being short-changed:* “There is always something happening on the location so every day we are mainly running and flying around”. Therefore, it was necessary to ensure that the critical success factors and key performance indicators would start tracking both short-term results and long-term developments (such as “number of employees participating in development projects” and “average number of ideas per employee”). According to the workshop participants, there was still enough renewal, although most of the innovations were more of an evolutionary than revolutionary nature, which in time could be a problem, although there was no consensus on this among the participants.
- *Make sure that locations, after developing their tailored solutions and innovations, documented what they did and then shared and discussed this with the other locations:* In addition, let employees rotate over the locations so that they could get to know these locations and what people were doing there. After this, they needed to take the acquired ideas back to their location and discuss there what they could use to combat the prevailing opinion that: “With ideas of other locations not much is being done

currently". During the workshop, the suggestion was made that managers from the participating companies could start to visit each other and tag along with a supervisor for a day to gain more in-depth knowledge about each other's operations and thus get ideas about improving their own operations.

### 6.5 High performance organisation factor employee quality

Strong point in this factor which was identified for all participating companies was that they were strongly externally oriented, in the sense that they entered into many collaborations with the goal to jointly grow revenue. The following were needed to improve and strengthen this factor:

- *Develop the potential of employees more by introducing or strengthening training-on-the-job and coaching-on-the-job:* This would prevent new employees from being left to their own devices: "After a short introduction period employees are hardly coached and thus don't fulfil their full potential".
- *Have more attention for keeping experienced workers, both in salary and in job enrichment opportunities:* The main complaint of mainly flex workers was that "We learn a lot but both the work and the salary stays the same so we cannot grow". The organisations ran a big risk here that, when the economy would pick up again, these experienced people would leave to go to other better-paid jobs. This could leave them with the task of training new inexperienced flex workers, which would affect productivity and possibly also quality negatively.

## 7. Conclusion

After the workshop with the four participating companies, it was possible to make a definition of an HPO in the agricultural sector, specifically in the greenhouse agriculture. It is "an organisation with managers who possess vocational and people skills and who are able to get the best from both fixed and flex employees in regards to input, commitment and ideas; this organisation keeps all employees well informed and actively asks for their input; people in this organisation are disciplined and effective in all process improvement and renewal efforts for long-term growth; and this organisation safeguards continuity in management, workforce, customers and suppliers".

The workshop participants concluded that the HPO Framework was suitable and useful for them to evaluate their current status and to start improving their organisations: "This was an eye-opener in the sense of a different, novel way to look at your own organisation". Reasons for the positive verdict were: the HPO Questionnaire turned out to be intelligible for most respondents (also because it was translated in the Polish language); the interview questions were about the issues that mattered to the organisations (this was checked during every interview by the last question: "Did we miss anything of importance during this interview?"); the HPO score patterns in the graphs were virtually the same for all organisations; and during the interviews and the workshop, it was confirmed that all four organisations were basically struggling with the same issues. Therefore, the HPO Framework accurately depicted the current situation of the participating companies, and the attention points were recognised by the workshop participants as indeed being the most important for their organisations. This means that our research question – "Can de Waal's HPO Framework be applied in the horticulture and greenhouse sector to evaluate the performance of horticulture and greenhouse companies and to come up with relevant recommendations for improvement?" – has an affirmative answer.

The theoretical implication of this is that a first step has been made towards closing the gap in the current literature on improving and strengthening the internal organisations of companies in the horticulture and greenhouse sector. As such, de Waal's HPO Framework can be used to conduct further research at other horticulture and greenhouse companies

and companies in the greater agriculture sector. The practical implication of the research is that the management of the four participating companies can use the research results with confidence to start improving their companies towards high performance agricultural organisations. Other companies in this sector now have an improvement technique at their disposal with which they can also strengthen their organisations. In addition, this sector has many associations and regional business clubs whose aim is to strengthen the position and performance of their members; they can start promoting the HPO Framework to their members as a tool for improvement.

There are some limitations to this research. Only four organisations participated with the result that the findings cannot just be generalised. Therefore, a logical next step in the research, as mentioned before, is to verify the research results with other companies in the industry and also to go beyond greenhouse horticultural organisations to other agri-food organisations. Another limitation is that in percentage terms, less employees have been interviewed, which might have created a certain bias in the interview results. Future research should therefore include more employees, taking care that the non-Dutch workforce is specifically included. The final proof of the pudding is in doing longitudinal research at the participating companies to see whether their strengthening the HPO factors will improve their performance in terms of both financial and non-financial factors.

## References

- Aramyan, L.H. (2007), "Measuring supply chain performance in the agri-food sector", PhD thesis, Wageningen University, Wageningen.
- Aramyan, L.H., Lansink, A.G.J.M., van der Vorst, J.G.A. and van Kooten, O. (2007), "Performance measurement in agri-food supply chains: a case study", *Supply Chain Management: An International Journal*, Vol. 12 No. 4, pp. 304-315.
- Boehlje, M., Roucan-Kane, M. and Bröring, S. (2011), "Future agribusiness challenges: strategic uncertainty, innovation and structural change", *International Food and Agribusiness Management Review*, Vol. 14 No. 5, pp. 53-81.
- Bremmer, J. (2004), "Strategic decision making and firm development in Dutch horticulture", PhD thesis, WUR Wageningen UR, Wageningen.
- CBS (2015), "Landbouw cijfers", available at: [www.cbs.nl/nl-NL/menu/themas/landbouw/cijfers/default.htm](http://www.cbs.nl/nl-NL/menu/themas/landbouw/cijfers/default.htm), (accessed 11 June 2015).
- Claire, J., Duncan, A. and Niamh, C. (2014), "Innovation and skills: implications for the agri-food sector", *Education + Training*, Vol. 56 No. 4, pp. 271-286.
- Dawes, J. (1999), "The relationship between subjective and objective company performance measures in market orientation research: further empirical evidence", *Marketing Bulletin*, Vol. 10, pp. 65-76.
- de Lauwere, C.C. (2005), "The role of agricultural entrepreneurship in Dutch agriculture of today", *Agricultural Economics*, Vol. 33 No. 2, pp. 229-238.
- de Waal, A.A. (2006), "The characteristics of a high performance organisation", Social Science Research Network, rev. 2010, available at: <http://ssrn.com/abstract=931873>, (accessed 1 October 2014).
- de Waal, A.A. (2012a), "Characteristics of high performance organisations", *Business Management and Strategy*, Vol. 3 No. 1, pp. 14-31.
- de Waal, A.A. (2012b), *What Makes A High Performance Organisation: Five Validated Factors of Competitive Performance that Apply Worldwide*, Global Professional Publishing, Enfield.
- de Waal, A.A. and de Haas, J.I. (2013), "Working on high performance in the Philippines: the case of NEH", *Global Business and Organizational Excellence*, Vol. 32 No. 5, pp. 6-21.
- de Waal, A.A. and Frijns, M. (2011), "Longitudinal research into factors of high performance: the follow-up case of Nabil Bank", *Measuring Business Excellence*, Vol. 15 No. 1, pp. 4-19.

- de Waal, A.A., Mooijman, E. and Ferment, M. (2015), "From crisis to all-time high performance: using the HPO framework to improve customer relations at Ziggo", *Global Business and Organizational Excellence*, Vol. 34 No. 2, pp. 6-18.
- Dentoni, D., Blok, V., Lans, T. and Wesselink, R. (2012), "Developing Human Capital for agri-food firms' multi-stakeholder interactions, global networks, global perspectives and global talent discussions on the development of human capital in agribusiness", *International Food and Agribusiness Management Review*, Vol. 15 No. 1, pp. 61-68.
- FAOSTAT (2015), "Food and Agriculture Organisation of The United Nations Statistics Division website", available at: <http://faostat3.fao.org/home/E> (accessed 11 June 2015).
- Fischer, C. (2013), "Trust and communication in European agri-food chains", *Supply Chain Management: An International Journal*, Vol. 18 No. 2, pp. 208-218.
- Hair, J.F., Anderson, R.E., Tatham, R.L. and Black, W.C. (1998), *Multivariate Data Analysis*, Prentice-Hall, NJ.
- Heap, J. and Bolton, M. (2004), "Using perceptions of performance to drive business improvement", in Neely, A., Kennerly, M. and Waters, A. (Eds), *Performance Measurement and Management: Public and Private*, Centre for Business Performance, Cranfield University, Cranfield, pp. 1085-1090.
- Jing, F.F. and Avery, G.C. (2008), "Missing links in understanding the relationship between leadership and organisational performance", *International Business & Economics Research Journal*, Vol. 7 No. 5, pp. 67-78.
- Lans, T., Biemans, H., Verstegen, J. and Mulder, M. (2008), "The Influence of the work environment on entrepreneurial learning of small-business owners", *Management Learning*, Vol. 39 No. 5, pp. 597-613.
- Lans, T., Biemans, H., Mulder, M. and Verstegen, J. (2010), "Self-Awareness of mastery and improvability of entrepreneurial competence in small businesses in the agrifood sector", *Human Resource Development Quarterly*, Vol. 21 No. 2, pp. 147-168.
- LEI Wageningen, U.R. (2014), "Agrimatie – informatie over de agrosector [Agrimation – information on the agri sector]", available at: [www.agrimatie.nl](http://www.agrimatie.nl) (accessed 3 November 2014).
- McElwee, G. (2008), "A taxonomy of entrepreneurial farmers", *Entrepreneurship and Small Business*, Vol. 6 No. 3, pp. 465-478.
- Matear, S., Gray, B.J. and Garrett, T. (2004), "Market orientation, brand investment, new service development, market position and performance for service organisations", *International Journal of Service Industry Management*, Vol. 15 No. 3, pp. 284-301.
- Matopoulos, A., Vlachopoulou, M., Manthou, V. and Manos, B. (2007), "A conceptual framework for supply chain collaboration: empirical evidence from the agri-food industry", *Supply Chain Management: An International Journal*, Vol. 12 No. 3, pp. 177-186.
- Ménard, C. and Klein, P.G. (2004), "Organisational issues in the agrifood sector: toward a comparative approach", *American Journal of Agricultural Economics*, Vol. 86 No. 3, pp. 750-755.
- Mugera, A.W. (2012), "Sustained competitive advantage in agribusiness: applying the resource-based theory to human resources", *International Food and Agribusiness Management Review*, Vol. 15 No. 4, pp. 27-48.
- Mulder, M., Lans, T., Verstegen, J., Biemans, H. and Meijer, Y. (2007), "Competence development of entrepreneurs in innovative horticulture", *Journal of Workplace Learning*, Vol. 19 No. 1, pp. 32-44.
- Noela, J. and Qenanib, E. (2013), "New age, new learners, new skills: what skills do agribusiness graduates need to succeed in the knowledge economy?", *International Food and Agribusiness Management Review*, Vol. 16 No. 3, pp. 17-35.
- Shukla, M. and Jharkharia, S. (2013), "Agri-fresh produce supply chain management: a state-of-the-art literature review", *International Journal of Operations & Production Management*, Vol. 33 No. 2, pp. 114-158.
- Simchi-Levi, D., Kaminsky, P., Simchi-Levi, E. and Shankar, R. (2008), *Designing and Managing The Supply Chains – Concepts, Strategies and Case Studies*, Tata McGraw-Hill, New Delhi.
- Snijders, H., Vrolijk, H. and Jacobs, D. (2007), "De economische kracht van agrofood in Nederland [The economic strength of agro food in the Netherlands]", Research report, Ministerie van Landbouw en Visserij, Den Haag.



Sporleder, T.L. and Boland, M.A. (2011), "Exclusivity of agrifood supply chains: seven fundamental economic characteristics", *International Food and Agribusiness Management Review*, Vol. 14 No. 5, pp. 27-51.

Trip, G. (2000), "Decision making and economic performance of flower producers", PhD thesis, WUR Wageningen UR, Wageningen.

van der Spiegel, M. (2004), "Measuring effectiveness of food quality", PhD thesis, Wageningen University, Wageningen.

van Leeuwen, M., de Kleijn, T., Pronk, B. and Verhoog, D. (2014), "Het Nederlandse agrocomplex 2013", Research Report, LEI Wageningen UR, Wageningen.

Verhees, F.J.H.M., Kuipers, A. and Klopcic, M. (2011), "Entrepreneurial proclivity and farm performance: the cases of Dutch and Slovenian farmers", *International Journal of Entrepreneurship and Small Business*, Vol. 12 No. 3, pp. 169-177.

Verhees, F.J.H.M., Lans, T. and Verstegen, J.A.A.M. (2012), "The influence of market and entrepreneurial orientation on strategic marketing choices: the cases of Dutch farmers and horticultural growers", *Journal on Chain and Network Science*, Vol. 12 No. 2, pp. 167-180.

### Further reading

Aramyan, L.H., Ondersteijn, C.J.M., Lansink, A.G.J.M., van Kooten, O. and Wijnands, J.H.M. (2006), "Analyzing greenhouse firm performance across different marketing channels", Vol. 22 No. 2, pp. 267-280.

## Appendix

**Table A1** The HPO factors and accompanying characteristics

Factor	Number	HPO characteristic	Score
ci	1	Our organisation has adopted a strategy that sets it clearly apart from other organisations	7.0
ci	2	In our organisation processes are continuously improved	7.1
ci	3	In our organisation processes are continuously simplified	6.4
ci	4	In our organisation processes are continuously aligned	6.6
ci	5	In our organisation everything that matters to the organisation's performance is explicitly reported	7.2
ci	6	In our organisation both financial and non-financial information is reported to organisational members	6.6
ci	7	Our organisation continuously innovates its core competencies	7.0
ci	8	Our organisation continuously innovates its products, processes and services	7.0
oao	9	The management of our organisation frequently engages in a dialogue with employees	6.7
oao	10	Organisational members spend much time on communication, knowledge exchange and learning	7.0
oao	11	Organisational members are always involved in important processes	6.3
oao	12	The management of our organisation allows making mistakes	6.9
oao	13	The management of our organisation welcomes change	7.2
oao	14	Our organisation is performance driven	8.2
mq	15	The management of our organisation is trusted by organisational members	7.8
mq	16	The management of our organisation has integrity	7.7
mq	17	The management of our organisation is a role model for organisational members	7.1
mq	18	The management of our organisation applies fast decision-making	7.0
mq	19	The management of our organisation applies fast action-taking	7.2
mq	20	The management of our organisation coaches organisational members to achieve better results	7.0
mq	21	The management of our organisation focuses on achieving results	8.1
mq	22	The management of our organisation is very effective	7.3
mq	23	The management of our organisation applies strong leadership	7.1
mq	24	The management of our organisation is confident	7.8
mq	25	The management of our organisation is decisive with regard to non-performers	7.3
mq	26	The management of our organisation always holds organisational members responsible for their results	7.5
wq	27	The management of our organisation inspires organisational members to accomplish extraordinary results	7.3
wq	28	Organisational members are trained to be resilient and flexible	6.4
wq	29	Our organisation has a diverse and complementary workforce	7.4
wq	30	Our organisation grows through partnerships with suppliers and/or customers	7.5
lto	31	Our organisation maintains good and long-term relationships with all stakeholders	7.5
lto	32	Our organisation is aimed at servicing the customers as best as possible	7.8
lto	33	The management of our organisation has been with the company for a long time	7.5
lto	34	New management is promoted from within the organisation	6.8
lto	35	Our organisation is a secure workplace for organisational members	7.5
		<i>Average HPO score</i>	<i>7.2</i>

**Notes:** This table lists the 35 characteristics of the five HPO factors, with the average scores for the four participating greenhouse horticulture organisations. The first column in the table shows the factor to which the HPO characteristics belong: ci = continuous improvement and renewal, oao = openness and action orientation, mq = management quality, wq = employee quality, lto = long-term orientation

### Corresponding author

André de Waal can be contacted at: [andredewaal@planet.nl](mailto:andredewaal@planet.nl)