

# Impacts of succession in family business

## A systemic approach for understanding dynamic effects in horticultural retail companies in Germany

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### Abstract

**Purpose** – While many studies in family business research focus on mono-causal impacts of succession, the purpose of this paper is to employ a systemic approach to analyze dynamic effects of intra-family succession on multiple business areas in family-run companies.

**Design/methodology/approach** – A system analysis using a participatory approach was conducted for a reference family-run company operating in the horticultural retail sector in Germany. The Vester Sensitivity Model, supplemented with principles from system thinking was used to identify key variables related to intra-family succession.

**Findings** – Expert input and analysis of variable co-occurrence revealed key variables associated with succession such as “strategic planning,” “productivity” and “financial flexibility.” Dynamic interactions among various business areas were identified by simulating interventions in succession trajectories. In particular, key variables such as “conflicts between family and work” and “organizational climate” turned out to be highly sensitive to changes during a succession process.

**Practical implications** – The concept and design of this system analysis tool will allow practitioners such as company managers and business consultants to better understand complex interrelations within companies and provide additional guidance with regard to critical events like business transfer.

**Originality/value** – The present study uses system thinking to analyze succession and its dynamic and time-lagged impacts on affected business areas in family-run companies for the first time. Repeated application of the systemic approach presented here to real-world business cases will gradually improve the tool and the quality of information it provides.

**Keywords** Succession, Participatory approach, System thinking, Family-run companies

**Paper type** Research paper

### 1. Introduction

Succession in small and medium-sized enterprises and, more specifically, in family-run companies is a core topic in business research that has received growing attention in recent years (Short *et al.*, 2016; Zahra and Sharma, 2004; Chua *et al.*, 1999, 2003). In Germany, 95 percent of enterprises are family-managed (Kay and Suprinovič, 2013). According to Freiling and Grossmann (2014), 86 percent of German family businesses were in need of succession due to the age of the incumbent management generation. A study conducted in 2013 estimated that approximately 135,000 family businesses would face the need of finding



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a successor within the next five years corresponding to 3.5 percent of all businesses in Germany (Kay and Suprinovič, 2013). Companies in this stage of the life cycle face several challenges and uncertainties jeopardizing their long-term viability. Failure of the succession process is one of the greatest threats to the survival of family businesses (Venter *et al.*, 2005).

### 1.1 Analyzing succession in family business

The present study analyzes the effects of either the lack of a successor or an ongoing succession process on other business areas in family-run horticultural retail companies. In Germany, the majority of these businesses are small companies that are both family-owned and -managed (BMEL, 2014b; Klein, 2000). Family businesses have received growing attention in the scientific literature in the past 40 years in the USA (Short *et al.*, 2016), and in the last 15 years in Germany (Klein, 2005). However, the understanding of “family” and “family business” differs among research studies (Harms, 2014; Chua *et al.*, 1999). For the purpose of this study, the term “family” refers to a multigenerational community of solidarity (biologically related or related by marriage) with similar basic objectives (e.g. reproduction, security, maintaining quality of life), but specific individual roles (Gabriel *et al.*, 2016). We define family-run companies as business organizations where “the manager is also the owner or a member of the owner family and makes decisions about short and long-term issues in the interest of the enterprise” Hauser (2005).

In Germany’s agricultural sector, almost 70 percent of companies did not have a succession plan in place in 2010, although two-thirds of the owners were older than 45 (BMEL, 2014a). Additionally, income insecurity and the perceived need for a high amount of own labor input discouraged potential successors and prompted them to opt for careers in other fields (BMEL, 2014b). In a survey of managers in horticultural companies in Germany, 40 percent of respondents named business succession as an important potential cause of change in the coming years (Meyerding, 2016). Yet, for most of the respondents, succession was unclear. The transfer process can have substantial consequences for company performance, structures, and the relationships among all stakeholders. Due to the manifold impacts of such a critical event in the company life cycle, related entrepreneurial decisions based on the analysis of single business units and management areas are insufficient. Schwaninger (2001) indicated that business analyses often lead to suboptimal results either due to focus on single business areas or to a disregard for interactions with other areas of the company.

### 1.2 Study objectives

A substantial amount of research has examined succession in SMEs and family businesses. Many studies have focused on the impact of succession on single areas of company organization, management, or social interaction, mainly analyzing impacts from a single-sided, static perspective. Thus, Bozer *et al.* (2017) investigated family business succession from multiple perspectives of incumbents, successors, family and non-family protagonists. Motwani *et al.* (2006) emphasized effective succession planning as an important impact factor for the continuity and development of family-run enterprises. The authors identified several efforts to develop detailed theoretical models and strategies for dealing with succession in family-owned businesses. Le Breton-Miller *et al.* (2004) referred to the fact that little effort has been spent on developing a comprehensive and multi-perspective model of succession and built a more holistic preliminary model that includes the context and process of successful family business succession. The present study follows an advanced systemic approach that considers the integrated and dynamic interrelations of various business areas within family-run companies as well as interactions with the environment outside. The study focuses on a reference horticultural retail company (HRC), in which the managers are confronted with the need to find a successor. The focus was on intra-family succession, in which family members affected are both owners and managers of the company, as this

situation represents the most common situation in HRCs in Germany. System analysis was applied to address the following objectives:

- (1) identify significant business areas affected by the succession situation of the reference company; and
- (2) understand the dynamic and time-lagged effects of either an uncertain succession situation or a succession, which is already in the process of implementation.

The emphasis of this study is not on the process of succession, but rather, on the dynamic effects the process has on other significant business areas and individuals involved in family-run HRCs. The study takes advantage of the principles of system theory and cybernetics incorporates system thinking and takes a participatory approach to model development. The method presented in this paper supports the further development of theory specifically related to family businesses. General business theories, such as financial theory, organizational theory, or transaction theory are typically applied to non-family enterprises, and thus, do not take into account the complex specifics of family businesses (Chrisman *et al.*, 2003). The method proposed in the present paper seeks to aid studies, which focus on succession in family businesses, as it contributes to future theory development in this area and provides information with practical implications related to the intricacies of generational change in business. As intra-family transfers of businesses will likely become even more important in the coming years, the study provides further insights into best practices regarding planning and implementation of succession in the complex context of intra-family generational transfers. The results of the system analysis applied to the reference HRC support practitioners such as company managers and business consultants in understanding complex interrelations within companies, and provide additional guidance with regard to succession and succession planning.

## 2. Succession in family business

Succession has become one of the most studied topics in family business research (Short *et al.*, 2016). Most of the literature on succession focuses on intra-family succession (e.g. Daspit *et al.*, 2016; De Massis *et al.*, 2008; Barach and Ganitsky, 1995). Chua *et al.* (1999) identified ownership, governance, management and succession as central components of family involvement in family businesses. In their analysis of succession in 152 Belgian family companies using regression modeling, Molly *et al.* (2010) rated business transfer as one of the most important events in the life cycle of a family business. External, non-family succession may be more likely to change the company's character and threaten its survival (Birley, 2002).

Several studies have investigated the direct impacts of intra-family business transfers on various business areas within companies. Both conceptual and empirical studies have uncovered multiple effects of succession that may either improve or impede the development and performance of the companies and stakeholders involved (e.g. Molly *et al.*, 2010; De Massis *et al.*, 2008; Venter *et al.*, 2006; Wang *et al.*, 2004; Lauterbach *et al.*, 1999). However, it remains unclear whether the effects of succession in family businesses are positive or negative with regard to the financial performance of the company. On one hand, prior studies have emphasized that, due to risk avoidance, successors are often reluctant to take on external debt following a generational transfer (Kaye and Hamilton, 2004; Ward, 1997). On the other hand, the desire of successors to advance company growth and the need to find appropriate ways to finance the transfer may trigger increased borrowing (Bjuggren and Sund, 2005). Additional economic considerations such as new investments, restructuring of the financing and inheritance taxes often accompany the process of succession (De Massis *et al.*, 2008; Bjuggren and Sund, 2005). Company performance after the transfer can even be an indicator of an effective business succession (Morris *et al.*, 1997). In a general view, Blackburn *et al.* (2013) suggested that strategy and entrepreneurial characteristics are of less importance for small business performance and growth.

For companies in the retail sector, consumers are a substantial stakeholder group affecting economic efficiency. Intra-family succession can have positive effects on consumer perception and business reputation. Successful intra-family business transfer, and retaining leadership in the family has been found to provide “reputational benefits” in terms of business relationships (Sharma, 2004) and to promote positive attitudes toward family-run companies among customers (Binz *et al.*, 2013).

In contrast to larger and non-family-managed companies, the “coincidence of family and business interests” gives rise to a unique set of challenges in family businesses (Davis, 1983, cited in Motwani *et al.*, 2006), in particular in the context of company succession. The generally accepted framing of interlocking spheres of business, ownership and family relationships (Tagiuri and Davis (1996); Gersick *et al.*, 1997) implies additional interpersonal and emotional components that should be considered when succession is pending. Multiple, sometimes conflicting, interests among family members and emotionally charged personal relationships can have both positive and negative consequences with regard to succession (Gudmundson *et al.*, 1999). Several studies in family business research identify potential conflicts between family members before, during and after the transfer. Such conflicts can disrupt family relationships and jeopardize business performance and business development (De Massis *et al.*, 2008; Davis and Harveston, 1999; Kets de Vries, 1993).

Moreover, significant personal relationships are not limited to the predecessor-successor link. Succession planning should consider effects on multiple stakeholders both within and beyond the family business (Daspit *et al.*, 2016; Barach and Ganitsky, 1995). Depending on their extent of involvement in the company, stakeholders are exposed to different impacts when confronted with uncertainty associated with succession. Motwani *et al.* (2006) analyzed the effects of succession on the relationships among family members and non-family employees in family-run companies. Employees’ respect for and trust in a potential successor’s competencies affects the employees’ relations with the successor (Deimel, 2005; Lansberg, 1988). The prospect of and trust in a successful business transfer promotes employees’ well-being and emotional connection to the company (Epitrokapi and Martin, 2005) and their motivation to work (De Massis *et al.*, 2008).

Recent literature on family businesses provides valuable findings regarding the impacts of succession on individual business areas and stakeholders involved in family-run companies. However, neglecting the complex interplay among the different areas is an apparent limitation of many of these studies (Molly *et al.*, 2010). In contrast to common business analysis methods, systemic approaches are able to bridge this gap and provide complementary knowledge on succession in family businesses.

### 3. German horticultural retail companies

The study presented here investigates the complex effects of succession in family business, as demonstrated for a reference company in the horticultural retail sector in Germany. An initial overview of some of the key characteristics of this business will contribute to a better understanding the situation of the reference company and the results of the analysis in the broader context of family businesses.

#### 3.1 Role of HRCs in the market for plants in Germany

Horticultural retail includes the production of ornamental potted plants and trees, perennials, cut flowers and marketing these as well as gardening accessories directly to the consumer. The horticultural retail market in Germany is the biggest consumer market for flowers and plants in Europe, with a market volume of €8.4bn and a per-capita consumption of €106 in 2014 (AMI, 2015). High labor- and capital intensity in combination with a relatively small production area and a high value-added characterize the industry (Behr and Niehues, 2009).

The industry has undergone substantial structural changes in the past 20 years (Behr and Niehues, 2009). Previous to these changes, HRCs were in a leading position with respect to the distribution of horticultural products to the consumer. Currently, they face an increasingly competitive market due to the arrival of new regional competitors, the expansion of nationwide chains, and the influx of alternative sales channels. The expansion of home improvement and garden center stores in the past two decades has resulted in a substantial decline of market share for HRCs. In 2010, there were approximately 15,000 points of sale for plants and flowers in Germany (Dirksmeyer and Fluck, 2013), and HRCs amounted to only one-third of these.

A majority of HRCs in Germany have fewer than ten employees and greenhouse facilities of less than one hectare (BMEL, 2014a). Despite these similarities, a uniform classification of HRCs is challenging, as they show a high degree of heterogeneity in sales structure and service orientation. The size of the retail sales floor and the range of products and services they offer varies widely, as does the proportion of the three main fields of activity in which they operate – plant production, retail and supplemental services such as grave maintenance and garden care. Reasons for this diversity include different trajectories of company development over time and diverse levels of social and economic integration in the local community. Despite this heterogeneity, the managers of these companies struggle with similar problems and challenges (distinct seasonality of horticultural production, consumer mitigation toward new market channels, declining availability of expertise on the labor market, increasing entrepreneurial and managerial requirements).

### 3.2 *Creating the reference company*

One prerequisite for conducting a systems analysis of a company through an open participatory process is that all of the actors involved are using a common language and are discussing the same subject (Schlange and Jüttner, 1997). As described above, comparing HRCs is relatively difficult due to their heterogeneity. Due to this heterogeneity, referring to an “average company” is not recommended. Therefore, a comprehensive HRC reference case was constructed to provide the experts involved with a clear image of the subject to be examined and used as a basis for the modeling process. The reference company is based on typical HRCs in rural areas of southern Germany according to official statistics (e.g. ZBG, 2014) and earlier studies that have analyzed this type of company (e.g. Gabriel *et al.*, 2012). This resulted, for example, in a definition that included the average number of employees, the size of the sales area, and specific aspects of service orientation. Key characteristics of the reference company include structural data (e.g. sales floor size, annual sales and number of employees), competitive situation and customer structure (Table I).

The overview provides detailed information to provide an overall picture of the reference HRC, such as the management policies and the family situation. Following the study’s objectives, the imminent business transfer is assumed uncertain, as the only child is hesitant to take over the company. The following analysis focuses on the dynamics of this succession situation and its impacts on other business areas in the reference HRC.

## 4. **Method and procedure**

Systems analysis is widely used in business research. However, an overview of the vester sensitivity model (VSM) method is provided below to ensure that the outcome of the analysis is understandable. In addition to the specific design of the present study, the basic analytic steps involved in the VSM method are presented with a focus on the in-depth analysis of the succession scenario of the reference HRC[1].

**Table I.**  
Summary of the reference company's characteristics

HRC characteristics	Brief description
Company development and income	Family business; producing flowers and plants for 40 years; owned and managed in second generation; 58-year old manager and spouse (53) both work in the company; their 16-year old child is involved part-time; 3,000 square meters heated glass and 600 square meters open field production; 800 square meter sales area including the in-house flower shop; annual turnover of €500,000 (three-year-average)
Labor situation	In addition to the manager, the spouse and child (1.75 workforce units), 4.2 employees (in workforce units) with the average age of 44 years and two apprentices; low fluctuation in the past 10 years
Production, retail and services	Production of seasonal plants, flowering potted plants, young vegetable plants and some trees and shrubs; high share of in-house plant production (80%); some additional services (10% of total revenues): in-house overwintering of plants, grave maintenance, flower delivery services and gardening services
Company location and customer base	Rural region, town with 6,000 residents; mainly long-term regular customers, the service and direct contact with the management family and employees is considered by customers to be important; customers tend to come from higher than average income households; customers desire extensive advice
Competitive situation	High competitive pressure through existing and new competitors; a newly opened home improvement store and a garden center are the main competitors; several local supermarkets sell seasonal plants; the HRC management family experiences competitive pressure with regard to prices, assortment offered and marketing
Company management	Manager is a professional gardener with high skill level in plant production; no hierarchical structure in the company, manager is main decision-maker; low level of delegation of responsibility; high level of job involvement of manager and spouse (little free-time, vacations rare)
Succession situation	Manager and spouse want to leave the business due to health problems; their only child is undecided about whether to take over the business

#### 4.1 Concept of vester sensitivity model (VSM)

VSM is a method and a software tool for modeling and analyzing different kinds of social systems that is based on principles of system theory and bio-cybernetics. Social-technological systems such as businesses are assumed to behave like natural systems in that they follow nature's fundamental principles of evolution, viability and self-regulation (Vester, 2007; Ulrich and Probst, 1990). Based on system theory, a transdisciplinary science of structure and classification of complex systems (Van Bertalanffy, 1968), the method also refers to cybernetics as an "approach of controlling and steering of complex systems" (Ulrich and Probst, 1990).

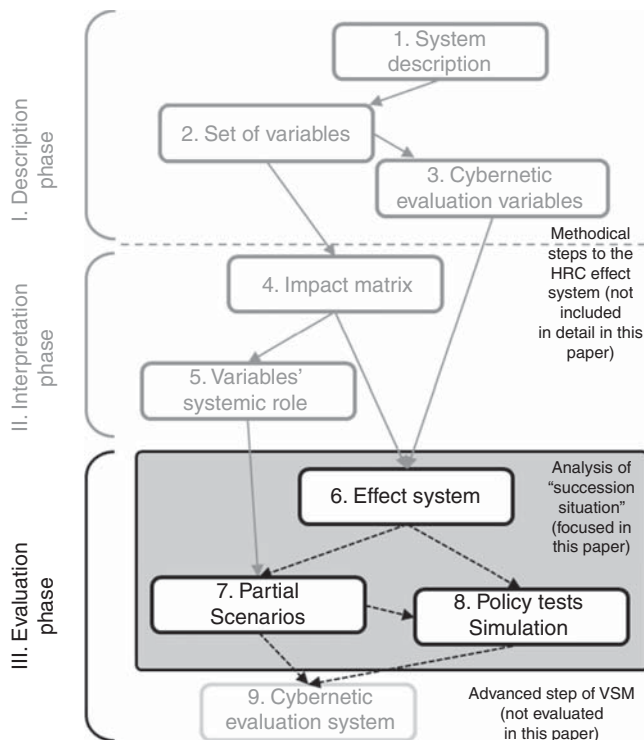
VSM was initially developed as a product of the UNESCO-program Man and the Biosphere (MAB II). The aim of MAB II was to solve complex problems of livelihood and ecosystems on a global scale (Vester and Hesler, 1982). Since its initial development, VSM has been refined and applied in a variety of fields and disciplines, such as resource management, environmental planning, and risk management[2]. Several business studies have used VSM to analyze management issues, corporate strategic planning and business consulting practices in German-speaking countries (e.g. Brexendorf, 2012; Wolf *et al.*, 2012; Burkhard, 2006).

In contrast to other methods of business analysis, integrative systemic approaches such as VSM cope with complexity, interdisciplinary and non-linear causal relationships in business management (Ulrich, 2001). While many conventional methods of business analysis rely exclusively on precise parameters and quantifiable input data, VSM enables the incorporation of fuzzy logic and qualitative assessments[3]. In particular, VSM emphasizes pattern recognition and dynamic feedback mechanisms in the systems analyzed

rather than mono-causal relationships and single-disciplinary considerations (Chan and Huang, 2004). VSM has been implemented as a software-supported analysis tool that operates with a participatory approach, heuristics and system thinking. System thinking helps the analyst to understand companies as transdisciplinary systems with interrelated elements where impacts on a single element have feedback effects on other elements in the system (Serman, 2000; Ulrich and Probst, 1990). VSM usually includes nine successive analytic steps grouped into three procedural phases (Figure 1).

The description phase starts with a general description of the system to be analyzed and the identification and cybernetic evaluation of a set of variables (system elements) considered decisive for the system's development. The interpretation phase serves to analyze the cause-effect relationships between various system elements to identify patterns of system behavior and define the systemic roles of each variable. According to the objectives of the present study, the third procedural phase – the evaluation of the scenario of succession and its impacts on other business areas in the reference HRC (gray box in Figure 1) – is the focus of the analysis.

Analysis of complex systems such as business organizations requires an integrated understanding of the interrelationships and multiple dynamic effects of interventions and other changes (Schlange and Jüttner, 1997). The various stakeholders of a company (e.g. owner-manager, family, employees, and consumers) have varying viewpoints based on their individual interests, experiences and level of involvement. Participatory methods enable the researcher to explore and integrate these different viewpoints and to deal with uncertainties (Bammer, 2005). Thus, participatory processes in systems approaches focus on communication and cooperation, and allow for the incorporation of contradictions among



**Figure 1.** Working steps of VSM with the focus for the succession scenario analysis presented here highlighted (gray box)

the various stakeholders involved, in order to help build consensus during the analysis and modeling processes (Chan and Huang, 2004). The inclusion of multiple perspectives and stakeholders generates two additional benefits – a structured dialog between participants and self-reflection among all parties involved (Bleicher, 2004). Incorporating stakeholders' different viewpoints in the modeling process enhances collaborative learning (Newig *et al.*, 2008), fosters motivation and consensus building (Bleicher, 2004) and improves the quality of issue-driven knowledge generation (Pohl and Hirsch Hadorn, 2008). Several of the working steps of VSM rely on the integration of different viewpoints and stakeholders' knowledge. The quality of the modeling process is not so much dependent on the number of participants as on the completeness of the perspectives considered and the level of knowledge of the participating experts.

#### 4.2 Preliminary work for the system model

The basis for the analysis of the succession scenario presented here was a larger, more comprehensive systemic model of HRCs. To create this model, an expert panel of 18 experts was chosen based on their familiarity with the horticultural retail sector in Germany. This knowledge was gained either through long-time experience in HRCs (six owner-managers, two employees) or through active involvement in the national horticultural retail sector (three business consultants, two suppliers, four scholars and one association representative). The opportunity for the experts to derive new insights from the experiences gained in the course of the study served to incentivize their initial and continued participation.

In two workshops, which took place at the beginning of the project, expert participants first familiarized themselves with the situation and characteristics of the reference HRC (see overview in Table I). One of the goals of the first phase of the modeling process (see Figure 1) was to cover all business areas of the company. In several steps of consensus building amongst the participating experts (workshops, online project platform, online evaluation), the model variables and their definitions in relation to the reference company were developed[4]. The final set of 35 variables included in the model were developed through this iterative process (Table II) that helped ensure a uniform level of aggregation (Vester, 2007; Högl, 1996). Explicit variable definitions were specified through communication and discussion

No.	Variable short name	No.	Variable short name
1	Social and environmental responsibility	19.	Customer-oriented marketing
2	Organizational climate	20.	Active pricing policy
3	Qualification to train apprentices	21.	Assortment competency
4	Optimal structure of employee base	22.	Limited willingness to cooperate <sup>a</sup>
5	Strategic planning	23.	Financial flexibility
6	Lack of economic skills and knowledge <sup>a</sup>	24.	Optimal size of sales area
7	Optimal tasks allocation	25.	In-house production
8	Sense of markets and customers	26.	Long-term continuity
9	Internal communication	27.	Profitability
10	Implemented company philosophy	28.	Productivity
11	Customer satisfaction	29.	Effects of societal changes
12	Highly competitive market <sup>a</sup>	30.	Barriers through regulation and legislation <sup>a</sup>
13	Relationships with suppliers	31.	Use of advanced technologies
14	Company's image	32.	Shortage of skilled labor <sup>a</sup>
15	Corporate communication	33.	Manager's production skills
16	Suitable location	34.	Conflicts between family and work <sup>a</sup>
17	Shop attractiveness	35.	Customers' appreciation of horticultural products
18	Standardization of work processes		

**Note:** <sup>a</sup>Negative connotations

**Table II.**  
List of variables identified



amongst the experts[5]. The variables “conflicts between family and work,” “shortage of skilled labor,” “lack of economic skills and knowledge” and “highly competitive market,” “barriers through regulation and legislation,” and “limited willingness to cooperate” were discussed as inhibiting factors and thus, defined in a negative sense.

A key step in the VSM process is the rating of the impacts of individual variables on one another by the expert panel, specifically with regard to the direction and strength of these impacts. Thus, the 18 experts were asked to conduct pairwise evaluations of the relationships between variables. The totality of variable relationships defines the systemic role of each variable and creates a comprehensive causal network (effect system) of the system variables and their interrelations (see Gabriel *et al.*, 2017). The perceptions of the participants regarding the relative strength of each of the cause-effect relationships was determined by asking the participants in an online survey, “if variable x changes, what will be the direct impact on variable y.” The experts were asked to rate this relationship based on a scale of four intensities (0 = “no impact,” 1 = “weak impact,” 2 = “medium impact,” and 3 = “high impact”).

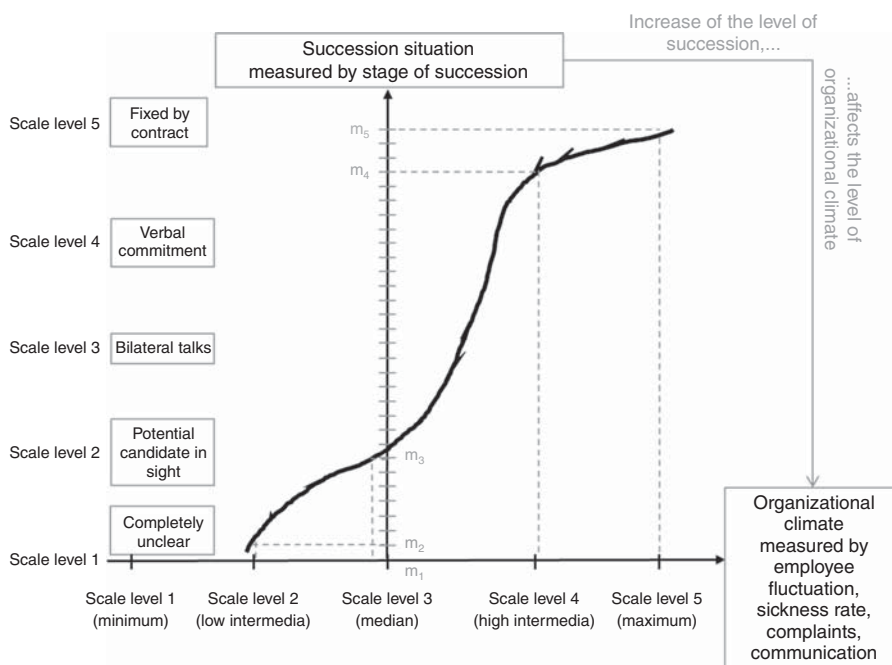
After the input from the experts was entered into the VSM software, the expert evaluations were quality checked and assembled into a consensus impact matrix. The impact matrix generated was then posted on the project’s online platform and made accessible to the entire expert panel. The final evaluation of the impacts formed the basis for the scenario analysis that followed. The effect system is composed of positive and negative directional links of variables that form closed feedback loops. In the case of the HRC system model, the 35 variables identified interact in more than five hundred feedback loops (see Gabriel *et al.* (2017) for an illustration of the complete effect system).

#### 4.3 Scenario analysis and dynamic simulations

Development of the effect system as described above enables the analysis of feedback loops and allows for the selection of specific areas of the system model (partial scenarios) for closer investigation. The VSM provides procedures for partial scenario simulation. Partial scenarios help gain a better understanding of the dynamics of specific areas that are most relevant to a particular problem, and allow for the simulation of the effects of potential system interventions (Vester, 2007). The partial scenario simulation presented here focused on elements of the system that could potentially be affected by succession.

Vester (2007) suggested reshaping variables in a partial scenario setup, when needed. The initial variable in the effect system used to refer to the succession situation was “long-term continuity” of the company (see abbreviated variable definitions in the). Therefore, the variable “long-term continuity” was narrowed to include only the state of succession and thus, renamed “succession situation.” The variables with the strongest and most frequent interrelations with “succession situation” were then extracted from the effect system to develop the succession scenario.

The extracted partial scenario was provided to a reduced group of six experts that had direct experience with the subject of succession in family business. These experts took part in a one-day “scenario workshop” in which they first identified measurable indicators for the variables that had been selected for inclusion in the partial scenario. Subsequently, they defined the cause-effect relationships between these indicators. Each of the six experts rated the change in the level of the indicators for an affected variable (horizontal axis) by hand drawing the effect of a stepwise change in the influencing indicators (vertical axis) from minimum (m1) to maximum (m5). In the illustrated example of one such expert assessment (Figure 2), the indicators for the variable “organizational climate” are on a low level when the succession situation is completely unclear, increase slightly when the prospect of a potential candidate within the family emerges and improve disproportionately when signs indicate that a succession is imminent.



**Figure 2.** One expert's handwritten assessment of the impact of "succession situation" on "organizational climate"

**Note:**  $m_i$  = points of measurement of the variable affected

Thus, the experts' assessments of the pairwise relationships between the variables in the scenario allowed the determination of non-linear and event-driven interrelations between pairs of variables (Vester, 2001) based on the experts' real-world experiences (Högl, 1996).

The five points of measurement ( $m_1$  to  $m_5$ ) of the affected variable for each of the cause-effect relationships assessed were quantified, aggregated and entered in the database of the VSM software package. Based on the identification of variables and their non-linear cause-effect-relationships, the partial scenario was prepared for simulating system dynamics in several policy tests. Policy tests in VSM allow the use of different indicator constellations to simulate possible events and business strategies in the scenario analyzed.

## 5. Results

Based on the total effect system of the HRC elaborated in the preceding analytic steps (see also Gabriel *et al.*, 2017), the design and analysis of the partial (succession) scenario served to identify business areas that are likely to be affected in the course of succession. Policy tests and simulation runs of these interrelated areas provide an understanding of the dynamic effects of succession in the family-run company.

### 5.1 Final partial scenario and measurable indicators

The partial scenario of "succession situation" was generated on the basis of the system elements that are most frequently interrelated with the scenario's target variable within the feedback loops of the effect system (co-occurrence). Thus, the analysis of co-occurrence of variables in feedback loops resulted in a reduced set of variables that were selected according to the highest rates of co-occurrence with the variable "succession situation" in the overall effect system (co-occurrence rates higher than 25 percent indicate a strong

cause-effect relationship between two variables). The target variable “succession situation” was involved in 218 loops. In 79 percent of those loops, the target variable co-occurred with “strategic planning.” Furthermore, “succession situation” frequently occurred with “company’s profitability” (70 percent), “customer satisfaction” (61 percent), and “organizational climate” (59 percent). Additional key variables that were closely linked with “succession situation” are “financial flexibility,” “assortment competency,” and “conflicts between family and work” (Figure 3; see also Appendix for definitions of the scenario variables).

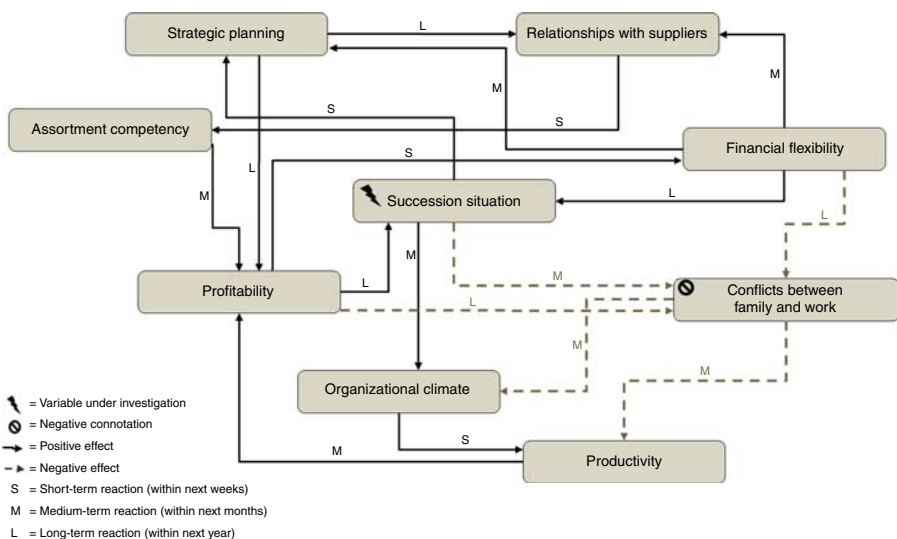
The experts then began to delineate the direction, intensity, and reaction periods of the cause-effect relationships between the linked variables (Figure 3). To categorize the reaction periods, the experts distinguished between short-term (S), medium-term (M) and long-term (L) reaction effects (L). For example, the key variable “profitability” had a positive short-term effect on “financial flexibility,” and attenuating long-term effects on “conflicts between family and work.” Similarly, while “succession situation” was positively affected by the “company’s profitability” in the medium-term, effects from interactions with “financial flexibility” were not seen until at least a year later (long-term).

In addition to developing the partial scenario, the experts identified 16 measurable indicators for the variables to be used in the subsequent simulations. Stage of succession, family atmosphere and planning motivation are examples of some of these indicators that were developed (Table III).

A five-point measurement system was used to specify the minimum, median and maximum state of each indicator and two additional intermediate levels. Based on the experts’ suggestions, some indicators were measured using quantitative data, such as annual turnover per employee for “productivity,” and number of employee sick days for “organizational climate.” Other indicators, such as the intensity of business contacts, used to operationalize the variable “relationships with suppliers” were measured qualitatively.

### 5.2 Policy tests and simulations

The experts’ assessments of the 18 pairs of cause-effect relationships were then used to conduct policy tests and dynamic simulations. Simulations were run for four policy tests –



**Figure 3.**  
Partial scenario  
“succession situation”

Scenario key variable	Measurable indicators	Scale definition: (1) = Minimum; (2) = Intermediate low level; (3) = Median; (4) = Intermediate high level; (5) = Maximum
Organizational climate	Employee fluctuation; Number of employee sick days; Employee complaints; Communication between management family and employees	(1) High employee fluctuation; high number of sick days; frequent complaints; open conflicts; (2) higher than average employee fluctuation; more than average number of sick days; considerable complaints; limited communication; (3) fluctuation as usual in the industry; number of sick days as usual in the industry; occasional complaints; communication; (4) lower than average fluctuation; lower than average number of sick days; complaints infrequent; needs-based communication; (5) no apparent fluctuation; low number of sick days; no noteworthy complaints; frequent communication
Strategic planning	Annual planning in written form; Business controlling measures; Planning motivation of the people involved	(1) No pre-designed planning scheme; lack of applied controlling measures; no inner motivation for planning; (2) "planning only in manager's mind"; "disordered controlling"; consciousness for planning requirement; (3) rough annual planning; selective controlling measures; need for planning reliability; (4) detailed annual planning; applying several controlling measures; constant desire for planning reliability; (5) detailed annual planning in written form with three-year projections; fully implemented controlling concepts; discomfort caused by lack of planning
Relationships with suppliers	Duration of relationships; Intensity of business relationships	(1) Changing supplier after transaction; mutual distrust; (2) frequent audit of suppliers' performance; tentative business relationships; (3) annual audit of suppliers' performance; common business relationships; (4) event-driven audit of suppliers' performance; trustful business relationships; (5) long-standing supplier relationships; personal bonds of trust with business partners
Assortment competency <sup>a</sup>	Number of products per category (product range); Number of price levels	(1) Product range too limited for customer needs; offering one price level; (2) product range more limited than customers desire; two price levels; (3) demand-driven product range; offering three price levels; (4) wider product range than required by customers; four price levels; (5) product range unmanageable for most customers; five or more price levels
Financial flexibility <sup>b</sup>	Liquidity ratio	(1) 0%; (2) 50%; (3) 100%; (4) 150%; (5) 200%
Succession situation <sup>c</sup>	Stage of succession	(1) Completely unclear; (2) potential candidate in sight; (3) bilateral talks; (4) verbal commitment; (5) fixed by contract
Profitability	Equity-to-asset ratio	(1) Over-indebted; (2) > 10%; (3) > 20%; (4) > 35%; (5) > 50%
Productivity	Turnover per employee	(1) < €50,000; (2) €50,000–75,000; (3) €75,001–100,000; (4) €100,001–125,000; (5) > €125,000
Conflicts between family and work <sup>c</sup>	"Family atmosphere"	(1) Synergies for the family life; (2) harmonious coexistence; (3) it takes its course; (4) regular conflicts; (5) family disintegration

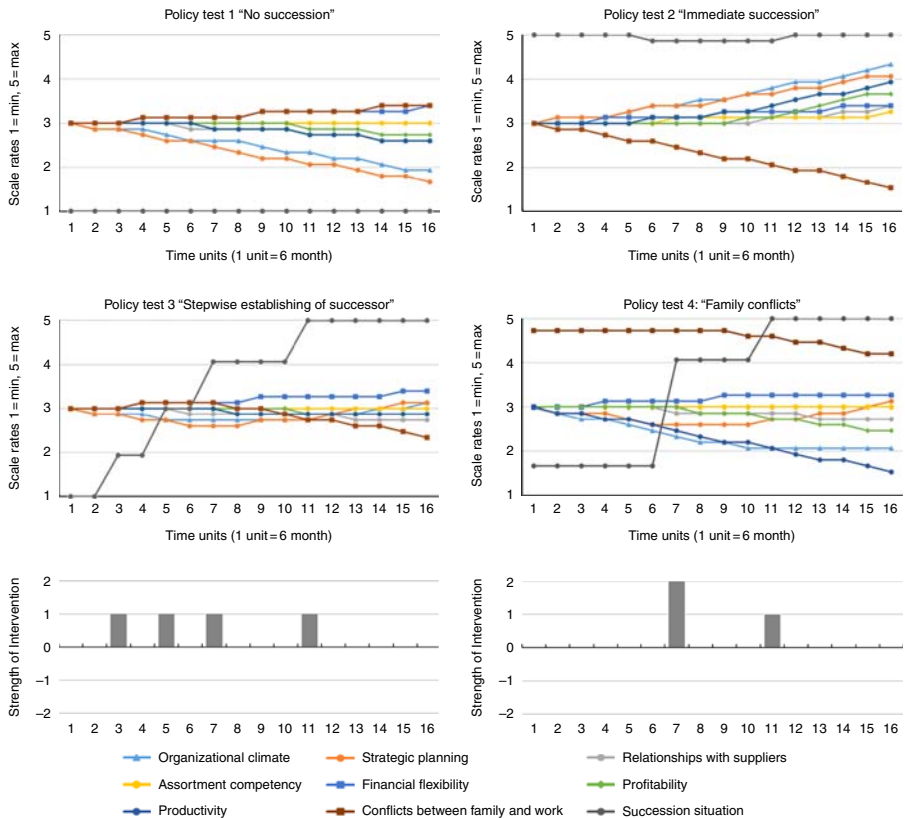
**Notes:** <sup>a</sup>Participating experts determined that in case of "assortment competency", the optimum variable state is not the maximum but the median. <sup>b</sup>Measured by the ability of a company to meet its current liabilities within four weeks. The higher the ratio, the greater the company's liquidity – a company with a quick ratio of less than 100 percent cannot currently fully pay back its current liabilities. <sup>c</sup>Considering the specific situation of the reference company

**Table III.** Indicators and measurement scales for the variables in the partial scenario

lack of a known successor, an ongoing succession, a delayed (stepwise) succession in the family company and an ongoing succession which is additionally impacted by a particularly high potential for “conflicts between family and work” (Figure 4). Based on different initial settings and interventions in the system, individual simulations identified trends for each of the key variables of the “succession situation” scenario over a period of eight years (16 time units, each representing half a year).

The first policy test assumed that the reference HRC is in need of succession, but no successor is identified during the period simulated (Figure 4, policy test 1). All other key variables were initially set at the median level (scale rate 3). In the first five years without any progress toward succession (time units 1–10), both “strategic planning” and “organizational climate” showed rapid declines, while “conflicts between family and work” and “financial flexibility” improved somewhat. The moderately positive development of the company’s financial situation implied a possible investment backlog due to the unclear HRC succession situation. Delayed impacts (after time unit 10) became visible for “relationships with the suppliers” and decreasing “profitability” of the reference HRC.

The trends in the key variables resulting from the second policy test which was built on the assumption that succession had already been established (by contract) at the beginning of the simulated period (Figure 4, policy test 2) were very different. In this case, “conflicts between work and family” decreased immediately. The rapid relief of tensions in the conflict situation implied that clarity regarding well-planned succession reduces tensions between work and family life and



**Figure 4.** Simulation of four policy tests of the partial scenario “succession situation”

improves the family atmosphere. The trends of “strategic planning” and “organizational climate” also suggested immediate improvement under more secure succession arrangements.

More delayed positive reactions were triggered for “profitability,” “financial flexibility” and “productivity” when succession was clear. There was a minor decline in the trend of “succession situation” after time unit six, which demonstrates the occurrence of rebound effects of single variables by the multiple interactions of the feedback loops in the partial scenario.

The third policy test simulated the systemic behavior of the partial scenario with a stepwise implementation of succession. Beginning with an unclear situation, the stages of succession were passed through at consecutive points in time (see intervention chart at the bottom of Figure 4, policy test 3). In this simulation, “strategic planning” and “conflicts between family and work” improved quickly after some progress toward succession was made, while variables such as “productivity” and “relationship with suppliers” experience recovered only after some time or remained stationary.

The fourth policy test (Figure 4, policy test 4) started with a relatively unclear succession situation in conjunction with a highly strained conflict situation between family life and work. The introduction of stepwise improvement in the succession situation after three years resulted in a delayed reduction in “conflicts between family and work” (The response begins to become visible at time unit nine). Implementing succession was more complicated when the “family atmosphere” was charged and when conflicts between family and work were evident. Furthermore, existing conflicts between family and work were difficult to resolve even after succession has been successfully implemented. Immediate negative trends in “productivity,” “profitability,” and “organizational climate” that developed early in the simulation recovered only gradually or not at all, despite completion of the succession process. In contrast, the variable “strategic planning” showed a highly sensitive reaction during the simulated period. “Strategic planning,” which included both aspects of the management’s skill set and long-term objectives of the company, yielded strong interactions with “succession situation” in the all four of the policy tests conducted.

## 6. Discussion

Extraction of a succession scenario from a previously established more comprehensive effect system allowed in-depth analysis of the dynamic effects of pending or needed (not yet implemented) succession in a specified period in a hypothetical reference HRC. As other researchers agree, that succession is not only a critical event but has also to be seen as a transfer process (Duh *et al.*, 2009, Morris *et al.*, 1997), a consideration of a period of several years in the succession scenario is quite appropriate. Simulations of immediate and stepwise implementation of succession in the reference company indicated that the most intense interrelations with variables representing the strategic planning ability of the management family and the conflict situation between family and work.

Many family-run companies face the problem of a lacking successor’s intention to take over the family company, in favor of an external employment or founding a new venture (Ljubotina and Vadnjaj, 2017). The scenario simulations indicated that the lack of a known successor affects the performance of the company in the period before the predecessor plans to step down. In situations where the succession situation remains unclear, long-term impacts on profitability and productivity of the company were also apparent. The analysis of the co-occurrence of variables in feedback loops showed intense cause-effect-relationships between the succession situation of the company and financial flexibility. While pertinent literature does not provide a clear indication of the impact of succession on productivity and financial performance (Molly *et al.*, 2010), an unsuccessful search for a successor may seem to impede the development of the company. For example, a swift and successful transfer can also facilitate the negotiation of better lending conditions (Gersick *et al.*, 1997). There can also arise improved payment conditions provided by suppliers, if trusting relationships

between the family company and external stakeholders were already in place. The scenario analysis of the reference HRC showed a close relationship between the succession situation and relationships with suppliers.

The partial scenario further includes the perspective of the employees as an important internal stakeholder group. Organizational climate emerged as a central and dynamic key variable. A functional relationship with the successor strengthens employees' motivation to work, and reduces work-related complaints, employee fluctuation and sick days. The scenario analysis showed conflicts between family and work as other interpersonal issues of high relevance to the succession situation. The simulations suggested that in the case of committed succession, conflicts between work and family decrease. An improvement in the overall family atmosphere was the result of the dynamic interactions of the scenario variables. Intra-family conflicts ultimately create a high risk of business failure (Freiling and Grossmann, 2014; Paul, 1996), business stagnation (Ward, 1997), or even the disintegration of the family (Flören, 2002).

Regarding the succession situation in family-run companies, the family business literature broadly discusses the importance of family cohesion, and the interaction of the family, ownership and management spheres (Bozer *et al.*, 2017; Gersick *et al.*, 1997). Aspects of ownership, such as non-employed family members and external investors were not considered by the experts in the workshops, due to the specific situation of the reference HRC. Although retaining leadership in the family through a successful intra-family business transfer can result in positive reputational benefits in family-run companies (Sharma, 2004), customer satisfaction' did not appear to be a key factor in the succession scenario. However, the diverse set of key variables the experts identified as having close links to the succession situation demonstrates that systemic approaches may be better able to handle the integration of multiple business areas in the analysis of this critical phase in the company life cycle.

## 7. Conclusions

The present study uses principles of system theory and system thinking to analyze succession in family-run companies and its dynamic and time-lagged impacts on affected business areas in family-run companies for the first time. Identification of close links between succession and various other business areas, such as strategic planning, conflicts between family and work and organizational climate provide managers and business analysts with valuable insights into potential future developments. The importance of system thinking for analyzing organizations is well recognized in business research with regard to learning, dealing effectively with complexity, and responding to changing dynamics (Kim *et al.*, 2014). Users of systemic approaches identify behavioral patterns of the business analyzed, which can support future decision-making (Högl, 1996). However, systemic approaches in business management should not be regarded as a substitute for common non-systemic methods of business analysis (Schwaninger, 2004), such as economic efficiency analysis and capital budgeting. Instead, they can provide additional guidance during strategic processes in real-world companies.

Methods based on system theory are particularly suitable for research into family businesses (Frank *et al.*, 2010). In Germany, many managers of family businesses are nearing retirement in the coming years, most of whom express a preference for intra-family succession (Freiling and Grossmann, 2014). Thus, analyzing significant business areas that may be affected by the succession situation is becoming increasingly important for managers, institutions supporting succession and business consultants.

Although the analysis focused on a specific type of company operating in the horticultural retail sector in Germany, the present study can stimulate further research and analyses of other business cases. The recursive approach of VSM allows backward adjustment of the analytical steps and adaption to the specific situations of real-world

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companies facing various challenges in many other branches and regions. In particular, the inclusion of relevant non-economic aspects such as family atmosphere, employee communication and organizational climate together with quantifiable data on company performance can provide an alternative approach to analyzing company structures and individual business affairs. Managers, consultants and business analysts transferring the analytic concept of VSM to real-world companies contribute to the further development of the method while generating real-world knowledge in the field of family business. Continuous learning through repeated application of system analysis to real-world business cases will gradually improve the quality of both, decision-making in family-run companies and the adaptation of general business theories to the specific properties of small businesses and family businesses.

The findings of the analysis of the reference HRC presented in this study are not sufficient to draw industry-wide conclusions: they are limited to possible effects in the specific reference HRC and cannot reflect the heterogeneity of companies in this sector. A variety of studies in the family business literature emphasized the significance of different impacts of business transfer depending on the type of company analyzed, family situation, and on regional and cultural differences. Thus, the situation of family business succession planning can differ strongly in different countries (Lussier and Sonfield, 2012).

Another limitation is that the present study does not distinguish between succession from the first owner-manager generation and successions which occur in subsequent generations, as has been analyzed in some earlier studies (e.g. Molly *et al.*, 2010; Davis and Harveston, 1999). Not all aspects of ownership in the overlapping subsystems between management and family (Gersick *et al.*, 1997) were captured in the modeling process of the reference HRC system. Consequently, these aspects were not included in the scenario analysis. In further research of real-world business cases, other aspects may prove to be more relevant, such as the predecessors' desire to either distribute or retain ownership shares after the business transfer. Furthermore, the business transfer process itself, with its multiple social exchange processes and interpersonal impacts (Daspit *et al.*, 2016; Gudmundson *et al.*, 1999), was only an incidental aspect in the analysis of the reference company. However, current literature does not provide a "one-size-fits-all" solution to the unique process of succession planning (Ip and Jacobs, 2006). Still, future research in the field of family and small business management and development can potentially benefit from the proposed systemic approach to business analysis due to the increased awareness of the multi-causal and dynamic effects of business decision-making it provides.

The key aspects emphasized in the system model presented here were strongly influenced by the input of the participating experts as well as the specifics of the hypothetical reference case employed. Applying the working steps of VSM to other business cases with different entrepreneurial challenges requires the input of experts with knowledge pertinent to those particular cases to identify the aspects that are especially relevant for each of the respective companies. The focus on communication amongst the various stakeholders involved and the incorporation of contradictions through the inclusion of real-world knowledge is one of the strengths of the method applied. Thus, participatory processes in systems approaches in order to help build consensus during the analysis and modeling processes.

In conclusion, methods based on system thinking enrich the toolbox of scholars, business analysts and consultants to generate integrated knowledge regarding company development (Mole, 2004). The application of system thinking and the participatory approach supported by VSM enable a multi-perspective view on complex organizational systems such as family-run companies and provide a better understanding of dynamic behavioral patterns during critical events such as business transfer. In a wider context, the present study contributes an integrated approach to analyzing family businesses and their specific entrepreneurial challenges.



## Notes

1. The first working steps of the VSM method resulting in the system model of HRC (effect system) are described in full detail in Gabriel *et al.* (2017).
2. A selection of published studies is listed on: [www.frederic-vester.de/eng/sensitivity-model/projects/](http://www.frederic-vester.de/eng/sensitivity-model/projects/)
3. Fuzzy logic uses the diffuse knowledge of real experience and allows for compromises in cases whereof contradictory information exists (Wolf *et al.*, 2012).
4. A detailed description of these steps is provided in Gabriel *et al.* (2017).
5. Supplementary material (including the complete list of variable definitions) is available from the corresponding author.

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(The Appendix follows overleaf.)

Variable	Consensus definitions (abbreviated)
Organizational climate	Members' subjective experience of their company, focusing on interpersonal relationships and communication; manifesting in job satisfaction and job performance
Strategic planning	Aspect of management's skill set; long-term objectives and measures considering the company's environment
Relationships with suppliers	Selection and treatment of suppliers; organizational collaboration with suppliers; reliability and consistent quality foster lasting partnerships
Assortment competency	Range and depth of products and services; differentiation, value added and seasonality
Financial flexibility	Room for strategic investments (includes credit line); liquidity in day-to-day business
Long-term continuity/ Succession situation	Maintenance and development of assets for the next generation; planning security of succession
Profitability	Ratio between profit and capital (credit, equity) in production and sales
Productivity	Ratio between output and input (human, area, resources); efficiency of work processes
Conflicts between family and work <sup>a</sup>	Aspect in family-run HRCs; lack a clear distinction of family life and business resulting in financial, physical, psychological, or time strain in family businesses

**Note:** <sup>a</sup>Negative connotation

**Table A1.**  
List of identified variables and their abbreviated consensus definitions

### About the authors

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