Defining and Aligning Supply Chain Objectives Before, During, and After the COVID-19 Pandemic

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Abstract—*In order to deal with the COVID-19 pandemic, many companies face numerous strategic decisions of utmost importance for their future. Being aware of one's objectives is a prerequisite for sound decision making. However, decision and policy makers are often not aware of their objectives when facing important decisions in "normal" times. In addition, specific objectives have to be identified in times of crisis such as the COVID-19 pandemic. In this article, we provide guidelines for managers that illustrate the following. (i) How to identify company objectives? (ii) How to align them within their supply chains and with governmental objectives of policy makers? (iii) How to adjust objectives during and after the COVID-19 pandemic? Furthermore, we suggest comprehensive sets of relevant objectives and propose an iterative process to define, align, and adjust objectives. The study may help practitioners from business and public administration when making decisions and policies. Researchers may be inspired by the outlined viewpoints on decision-making processes and the addressed perspectives for future research.*

Key words: CEO decision making, COVID-19 pandemic, decision analysis, objectives, supply chain

I. INTRODUCTION

THE COVID-19 pandemic has dramatic consequences for individuals, companies, and societies. Many firms are affected not only directly by the pandemic but also indirectly by management decisions of their supply chain partners and by changes in the business environment resulting from decisions taken by policy makers ([Xu *et al.*, 2020]; [Dewick *et al.*, 2020]). In business segments such as the hospitality and tourism sector or the entertainment industry, companies may even not be able to continue their operations and will have to substantially adapt their business model due to the COVID-19 pandemic ([Gurbuz & Ozkan, 2020]; [Rebillard, 2020]; [Richter, 2020]; [Suresh *et al.*, 2020]).

In order to deal with the COVID-19 pandemic, decisions have to be made on the microlevel of a single firm and aligned on the mesolevel of the supply network as well as on the macrolevel of the political environment. Management decisions on the microlevel of a single firm are related to what and how much shall be produced and if the product assortment shall substantially be changed. Examples include car manufacturers and textile companies that begin to produce face masks or ventilators, respectively ([Naughton and Stein, 2020]; [Nicola, 2020]). Management decisions on the mesolevel of a supply chain aim at ensuring continuous component supply and product delivery or focus on adapting the supply network ([Ivanov, 2020a]; [Okorie *et al.*, 2020]; [Queiroz *et al.*, 2020]; [Xu *et al.*, 2020]). Some of the related strategic decisions are irreversible and, thus, will shape the future of companies and their supply networks [Ishida, 2020]. On the macrolevel, decisions made on the microlevel and mesolevel are complemented (and often complicated) by political decisions of policy makers that affect the economy and the business environment of companies and their value chains [Gosavi & Marley, 2020]. Being confronted with substantial threats of the population, legal authorities and governments (need to) make decisions that change demands, restrict material flows, and limit manufacturing, logistics, and service operations. Examples range from social distancing regulations for manufacturers (GMB, 2020) and work from home [Dixit *et al.*, 2020] over transport restrictions within the European Union (European Commission, 2020b) to governments ordering personal protection equipment in large amounts ([Armour, 2020]; DW 2020). Other political decisions motivate, urge, or even oblige firms to expand their production capacity and to adapt their manufacturing technology in order to fabricate medical devices (BMWi, 2020; [Leary, 2020]) during public supply shortages [Ranney *et al.*, 2020].

In reaction to these new challenges, consulting services offer decision support to managers in companies of global value chains ([Alicke *et al.*, 2020]; [Lund *et al.*, 2020]), while policy makers of supernational institutions and organizations provide guidelines for trade procedures and border management in order to maintain trade and material flows and to ensure the availability of goods and services (European Commission, 2020; World [Bank Group, 2020]). However, such measures hardly reduce the risk and the complexity of the decision situations during the pandemic crisis, which in turn lets managers as well as policy makers struggle with decision making. These difficulties are amplified by suboptimal reactive and backwards-oriented thinking of the decision makers [Keeney, 1992].

Many decision or policy makers are reactive in their decisions and usually choose the default alternative to change nothing until they have to do something [Tversky & Kahneman, 1974]. A decision or policy maker who has to deal with a decision problem quickly identifies the obvious alternatives and then spends substantial effort in evaluating them. Due to this so-called alternative-focused thinking, the best options may not be identified and therewith cannot be implemented [Siebert & Keeney, 2015]. Instead, Keeney [1992] recommends identifying the values first, translating them into objectives, and then using these to create more and better options. Recent empirical studies provide evidence which suggests that prompting with objectives leads to more and better options ([Siebert & Keeney, 2015]; [Siebert, 2016]).

Especially in times of a crisis, strategies of reactive alternative-focused thinking and decision making lead to suboptimal results [Siebert & Keeney, 2020]. Even in “normal” times, many decision and policy makers are not aware of all possible objectives when facing an important decision situation [Bond *et al.*, 2008]. In times of an unforeseen crisis, the set of objectives is even more likely to be incomplete. Hence, decision makers should apply value-focused thinking to maintain or ideally strengthen their firm’s position during the crisis.

In this article, we outline approaches to identify objectives for a company and to harmonize them within the supply chain and with governmental (politico-economic) objectives. Furthermore, we propose a set of objectives that might be useful when making high-impact decisions. We also suggest a procedure to adjust objectives in times of a crisis such as the COVID-19 pandemic. Based on these approaches, we develop an iterative process of defining, aligning, and adjusting objectives.

The remainder of this article is structured as follows. The next section informs about the background of this study and the applied research methods. Section III elaborates on identifying objectives in supply chains, while Section IV focuses on the COVID-19 pandemic. Concluding remarks are given in Section V.

II. Information on Background and Methods

A. Background The particularities of the specific (long- or short-term) decision situation need to be considered when defining objectives within an organization [Keeney, 1992]. However, managers often stick to general objectives instead of defining specific ones, just like the phenomenon observed at the use of a generic scorecard. Kaplan & Norton [1996] designed a merely generic balanced scorecard and strongly recommended substantially adjusting this template according to specific requirements in order to reveal the full potential. However, most companies simply use the generic scorecard template or just a slightly adjusted version.

Nowadays, it is not sufficient to focus only on the own organization. Objectives need to be aligned across the supply chain [Oliva and Watson, 2011], but this is often complicated by information updating [Shen *et al.*, 2019] and information asymmetries [Vosooghidizaji *et al.*, 2020]. Moreover, the behavior of different supply chain actors is motivated by local management control systems in such a way that it is not congruent to the overall supply chain objectives [van Veen-Dirks & Verdaasdonk, 2009]. Further complexity is added by the need for aligning objectives between supply chain members and with legal authorities. Such an alignment is needed when intentions of policy makers influence or modify the business environment, e.g., when government interventions meet supply chain governance systems [Vermeulen & Kok, 2012] or when governmental subsidies affect formation and operation of supply networks [Ma *et al.*, 2013]. However, structured approaches for the alignment or adjustment of objectives are seldom found in scientific research.

Effective decision making and thus appropriate goal setting is required in general and even more during periods of a crisis such as the COVID-19 pandemic. Restarting and successfully recovering an organization from a major disaster without missteps that prolong the recovery phase is a challenge for managers [Trybula and Newberry, 2020]. Thus, leadership is important to accomplish the required organizational transformation to the “next” or “new” normal after a pandemic or crisis [Pozner, 2020]. Radical transformation and a quick reshape of the management control system are critical success factors for organizational transformation during the COVID-19 pandemic [Gil, 2020]. In order to survive during a challenging and threatening period of change, a supply chain should be able to simultaneously maximize profitability, restore system operations and performance, maintain the supply chain existence, and secure the provision of products or services to the society [Ivanov, 2020b]. However, the direction of change and transformation depends on the specific setting and strongly differs between various industries. For example, during the COVID-19 pandemic, the automotive industry shifts toward centralized management models, while personal computer manufacturers take advantage of their global supply chains, and the home furnishing sector requires tighter vertical integration [Ishida, 2020]. Consequently, context-specific objectives have to be defined and aligned. In addition, it must be noted that an objective that is appropriate for one organization is not necessarily suitable for the other.

These insights illustrate that managers need to be aware of and focus on relevant objectives in order to successfully lead their organizations through a crisis period and reshape them afterwards. However, literature on the ability to create a complete and comprehensive set of objectives for organizations is scarce. A notable exception is Keeney [1999] who interviewed decision makers at Seagate Technology[1] and identified 39 distinct objectives in 8 categories and furthermore revealed that, on average, one individual identified only about one-third of the objectives. These results are confirmed by a more recent, yet unpublished study conducted by Johannes Siebert with 20 key decision makers of a large energy supplier in Europe. In a series of three studies, Bond *et al.* [2008] detected that decision makers were able to identify only about half of the objectives they subsequently assessed as relevant and that the objectives identified with and without help were of similar importance to the decision makers. Keeney [1994, p. 798] pointed out that “the most obvious way to identify objectives is to discuss the decision situation with decision makers” and recommended several techniques to identify objectives. Applying these techniques, Kunz *et al.* [2016] identified 698 distinct objectives for a medium-sized media company.

Identifying objectives is even more important when a joint and cooperative setting is not in place. Keeney and von Winterfeldt [2010] developed an approach to identify objectives of enemies or terrorist groups based on available primary sources, such as direct statements by terrorist leaders and observed actions by terrorist groups, and secondary sources including reports on and interpretations of terrorist statements and actions. Siebert *et al.* [2016] extended this method by a review of structured expert interviews and applied it to elicit fundamental and strategic objectives of leaders and followers of the ISIL terrorist group.

[1] In the 1990s, Seagate Technology was the world’s largest manufacturer of disc drives and components.

B. Methods The background information given in Section 2.1 illustrates that research is required on the question how to identify, align, and adjust objectives before, during, and after times of crisis within an organization and across the supply chain. Rather than providing comprehensive answers to this question, we provide starting points for further discussion, scientific research, and management action. The decision-making approach proposed in this article is inspired by and based on Keeney’s [1992] idea of value-focused thinking.

Since decision makers “benefit greatly from a ‘master list’ that provides an abundance of potential decision objectives” [Bond *et al.*, 2008, p. 69], we create such master lists to inspire practitioners as well as researchers who deal with decision making in times of COVID-19. Most of these objectives for decision situations during the COVID-19 pandemic are derived from scientific literature and complemented by practitioners’ reports. Additional objectives are identified by semistructured interviews conducted with leading experts from scientific research and executives from management practice. Based on these insights, the proposed conceptual framework is designed in theoretical desk research.

III. Identification of Objectives in Supply Chains

A. Identifying Intraorganizational Objectives Although identifying objectives is of utmost importance for business success, many decision makers are not always fully aware of all relevant objectives in important decision situations [Bond *et al.*, 2008]. Objectives need to reflect the specific business environment of a firm, in particular its competitors and supply chain partners. However, many decisions are made based on generic objectives. Such a set of generic objectives surely may serve as a starting point. Nevertheless, decision makers should necessarily identify a comprehensive set of objectives that are relevant to their specific decision problem and the business context of their organization.

In practice, many companies consider only the obvious generic objectives such as minimize costs, maximize quality, minimize delivery time, or maximize resilience. There are two reasons for this behavior. First, managers often behave reactively in their decision making [Siebert and Kunz, 2016] and have become accustomed to considering the objectives they considered in similar decision situations in the past [Keeney, 1992]. Instead of framing their decisions strategically from a bird's eye view and considering other decisions proactively and in a future-oriented manner, many decision-makers deal with challenges reactively and operatively in isolation from other decisions and with the limited sight from a worm's eye view [Siebert and Kunz, 2016]. Second, although decisions makers might be willing to think broadly and identify additional relevant objectives in times of disruptive changes or a crisis such as the COVID-19 pandemic, they often lack the knowledge, expertise, or experience about the new decision context. For example, many people did not even know which objectives they should consider in their personal decisions concerning COVID-19 before spring 2020. The same applies for organizational decision makers, especially in the case of many organizational entities.

Any decision should be driven by values that can be specified with objectives. In case of individual decision making, it is obvious who should be asked to identify the values and objectives. However, in practice, many decisions involve multiple stakeholders and decision makers. Therefore, it is often unclear who is supposed to articulate the values and objectives, especially in a large or complex organization. Particularly in terms of complex decision problems, it is not clear *a priori* who holds responsibility because many departments may be affected by the decision. Moreover, decision processes often evolve over a period of time, during which additional decision makers may be consulted. Consequently, interested individuals with a knowledgeable background should identify the objectives for a decision situation [Keeney, 1992]. In practice, it is therefore recommended to gather objectives from a sufficiently large and diverse group of decision makers that encompasses all possible concerned management levels [Bond *et al.*, 2008].

A simple wish list in which the decision-makers articulate what they value or want to achieve often is a good starting point to identify objectives. Thinking about alternatives, problems and shortcomings, consequences, goals, constraints, and guidelines can further stimulate the identification of objectives. Another technique is to address the problem from different perspectives, e.g., the future concerns of competitors. Furthermore, categorizing objectives as strategic, fundamental, or means, as well as structuring and quantifying them, can stimulate thinking and help identifying additional objectives [Keeney, 1992]. Mind-probing methods as listed in Table 1 can be applied to identify objectives if the decision makers are accessible and willing to contribute. This is usually the case when the decision situation concerns decision-makers' organization.

The standard approach to identifying objectives involves interviews with organizational leaders, decision makers, and stakeholders. In a first step, the decision makers are interviewed individually and initial lists with the objectives of each decision maker are created. In the second step, these initial lists are aggregated to a comprehensive master list. In the third step, additional objectives are identified

Table 1. Mind-Probing Methods to Identify Organization's Objectives (Based on [Keeney, 1992]).

A wish list	What do you want? What do you value? What should you want?
Alternatives	What is a perfect alternative, a terrible alternative or a reasonable alternative? What is good or bad about each?
Problems and shortcomings	What is wrong or right with your organization? What needs fixing?
Consequences	What has occurred that was good or bad? What might occur what you care about?
Goals, constraints and guidelines	What are your aspirations? What limitations are placed upon you?
Different perspectives	What would your competitors, customers, or your electorate be concerned about?
Strategic objectives	What are your organization's ultimate objectives? What are your values that are fundamental?
Generic objectives	What environmental, social, economic or safety objectives are important?
Structuring objectives	Follow means-end relationships: Why is that objective important? How can you achieve it? Use specification: What do you mean by this objective?
Quantification of objectives	How would you measure achievement of an objective?
Master list of objectives	Which objective from the provided master list is relevant for the decision problem?

based on the master list in a group discussion. If an organization is not willing or able to spend this effort, it can be very useful to consult a master list of objectives which was created for a similar decision problem.

It needs to be clarified how many objectives should be identified in an organization, because too many objectives are not helpful in practice. The master list of objectives should contain about 30–50 objectives covering the areas of all strategic decisions to provide a sound basis for choosing the relevant objectives in a certain decision situation [Keeney, 1999]. Table 2 describes a list of 33 possible company objectives for present and future times that resulted from expert interviews, workshops, and literature research conducted by the authors. In accordance with Brandenburg [2018], we recommend using four–seven fundamental objectives when evaluating alternatives and up to a dozen objectives when using objectives as prompts to create alternatives.

Studies on the balanced scorecard (see, e.g., [Kaplan & Norton, 1996]; [Figge *et al.*, 2002]) show that objectives should be grouped into different categories. Hence, we suggest five different categories for illustrative purposes: foundations of current success, operating business, and output as well as future strategic opportunities and foundations of future success. Some of these objectives, e.g., time-based or financial ones, can easily be quantified and measured by key performance indicators [Bishop, 2018]. Others represent qualitative targets which can be measured and steered by an adequate proxy. For example, "minimize environmental degradation" could be measured with the carbon footprint based on the assumption that there is a causal relationship between carbon footprint and environmental degradation. For many other objectives, it is not so easy to derive a numerical measurement, e.g., there is no obvious numerical scale to measure the objectives "maximize decision readiness," "maximize flexibility," or "survive and flourish." For such qualitative objectives, the decision maker can construct linguistic scales, apply Likert scales, or use school grades ([Siebert & von Nitzsch, 2018], [2020]). In any case, the interdependencies between interrelated objectives need to be considered when quantifying or measuring the objectives by metrics or proxies and when controlling and steering the business (see, e.g., [Brandenburg, 2018], for the management of conflictive and complementary objectives).

Table 2. Examples of Objectives of a Company in Present and Future Times.

Objectives for present times	Future-oriented objectives
Foundations of current success • Maximize employees` satisfaction • Provide quality leadership • Develop a high-quality workforce • Have a good work environment • Make high-quality decisions	Future strategic opportunities • Gain competitive edge • Become technology, cost, or quality leader • Identify and invest in trends early • Identify new business models
Operating business • Minimize costs • Minimize cost of capital • Maximize market share • Gain new customers • Maximize quality • Minimize time • Minimize environmental degradation • Minimize negative social impacts • Operate effectively • Operate efficiently • Maximize customer experience	Foundations of future success • Maximize flexibility • Maximize resilience • Maximize agility • Minimize risks • Maximize responsiveness • Maximize innovativeness • Maximize decision readiness • Balance product/service portfolio
Output • Maximize profit • Maximize shareholder value • Survive and flourish • Create value • Provide benefits to stakeholders	

To sum up, five recommendations serve as guidelines for the identification of intraorganizational objectives on the microlevel.

1) Define specific objectives.
2) Involve an informed group of knowledgeable experts.
3) Conduct expert interviews and apply mind-probing methods.
4) Select 4–7 fundamental objectives from a master list of 30—50 objectives and group them into different categories.
5) Measure objectives by metrics or proxies and consider interdependencies between interrelated objectives.

B. Identifying and Harmonizing Objectives on the Interorganizational Level The identification of intraorganizational objectives can only be the starting point. Aligning objectives on the mesolevel across the supply chain and on the macrolevel with governmental policy makers is required. On the mesolevel of supply networks, managers should ensure that all individual objectives of each supply chain member are harmonized. This is required to prevent unsynchronized and heterogeneous objectives that would result in unclear directions and misleading decisions when managing the whole network. Company objectives need to be aligned across the supply chain, because competition is shifted from single firms to supply chains [Christopher, 2005]. In the alignment process, it is possible to identify and align objectives of many supply chain members in interviews or in joint workshops with the help of the mind-probing methods listed in Table 1.

Unfortunately, it may not be possible to involve all supply chain members into the process of aligning objectives. Given the fact that most supply networks comprise hundreds of cooperating firms ranging across many different tiers, the group of supply chain actors who are actively involved into the objective alignment process may deliberately be limited to key customers and suppliers due to complexity reasons. Furthermore, power asymmetries may prevent larger companies from getting involved into alignment processes initiated by smaller firms in their network. If a supply chain member does not actively participate in the alignment process, the methods listed in Table 1 are not suitable for the identification of objectives. However, it is possible to identify also the (main) objectives of supply chain members who do not actively participate in the alignment process. Every organization informs about its values and objectives, either voluntarily (e.g., to show that they are “green” to gain new customers or investors) or obligatorily (e.g., to comply with reporting regulations). Thus, primary and secondary sources of not actively involved supply chain members may inform about their main objectives. If there is no direct access to supply chain members, we recommend studying open source material. This approach, which was successfully tested to identify objectives of (uncooperative) terrorist groups (Keeney and von Winterfeldt, 2010; [Siebert *et al.*, 2016]), can be applied to identify objectives of supply chain members who are not actively involved in the alignment process. The ones who are willing but not able to participate in the alignment process may help compiling related material and complement it by providing confidential information.

Interorganizational objectives need to reflect process orientation and collaboration that characterizes every supply chain. They may serve as constraints for intraorganizational objectives of individual supply chain members. For example, if a firm that strives for carbon footprint minimization operates in a supply chain that aims at accelerating the material flow, the single firm must still achieve a predefined threshold for material flow speed when reducing carbon emissions. Such thresholds as well as supply chain objectives can be defined jointly and fixed by contracts or agreements between the supply chain partners.

A set of process- and collaboration-oriented supply chain objectives is listed in Table 3. The process-oriented objectives are in line with Stock & Boyer [2009] who distinguish between three types of flows by which companies are linked in supply chains. The collaboration-oriented objectives reflect the idea of value-creation, value-capture, and value-sharing in the supply chain ([Yücesan, 2007]; [Brandenburg, 2013]).

To sum up, five recommendations serve as guidelines for the interorganizational alignment of objectives across the supply chain on the mesolevel.

1) Conduct interviews or joint workshops with supply chain partners to identify and align objectives.
2) Use information material to identify objectives of supply chain members who are not willing or able to actively participate in the alignment process.
3) Reflect process orientation and collaboration in the supply chain objectives.
4) Supply chain objectives may serve as constraints for intraorganizational objectives of single firms.
5) Fix supply chain objectives and thresholds in agreements or contracts.

In addition to the supply chain-wide alignment of objectives on the mesolevel, all supply chain members need to harmonize their objectives on the macrolevel with the ones of policy makers from governments and legal authorities. Governmental objectives may represent constraints or guidelines for the supply chain management, just like the harmonized supply chain objectives may serve as constraints for objectives of single firms. Only if business objectives are in accordance with governmental ones,

Table 3. Examples of Supply Chain Objectives.

Process-oriented objectives	Collaboration-oriented objectives
• Improve flow of information • Improve flow of money • Improve flow of goods	• Maximize commitment to supply chain partners • Intensify collaboration within the supply chain • Distribute profit fairly across the supply chain

firms can benefit from governmental incentives (subsidies, etc.) and minimize governmental penalties (fees, surcharges, additional taxes, etc.). For the alignment process on the macrolevel, similar approaches apply as for the mesolevel alignment of objectives across the supply chain. If policy makers are able and willing to actively participate in the alignment process, they may be interviewed by supply chain managers or involved in workshops. Else, it is possible to identify objectives of policy makers who are not willing or able to be involved in the alignment process (just like for supply chain members who do not participate in the alignment process): Managers may extract information on (socio-economic) objectives of legal authorities from governmental publications, announcements, laws and regulations, or other accessible sources.

A formal process to align objectives between firms, supply chains, and legal authorities is not always required to ensure or maximize business success. In “normal” times with politically stable contexts, the (socio-economic) objectives of policy makers are represented by laws and regulations, which firms must follow, and by subsidies and other governmental incentives, which companies may want to gain. However, in times of instability, fundamental changes, or crises, this regulatory mechanism may not work efficiently or fast enough. In such cases, the continuous alignment of objectives on the macrolevel is recommended (maybe even required) to ensure that the objectives of all involved parties are met (or at least not substantially missed).

To sum up, five recommendations serve as guidelines for the interorganizational alignment of objectives with policy makers on the macrolevel.

1) Supply chain objectives must be in accordance with governmental objectives.
2) Methods similar to those suggested for individual companies help aligning objectives with policy makers and across the supply chain.
3) Governmental objectives may represent constraints or guidelines for the supply chain and each of its members.
4) In “normal” times, a formal process is not required to align governmental and business objectives.
5) In “exceptional” times of change or crisis, a formal process may help aligning the objectives efficiently.

IV. How to Reflect The COVID-19 Pandemic by Appropriate Objectives

For several reasons, it is likely that company and supply chain objectives need to be changed in the COVID-19 pandemic or a similar crisis. First, the business itself most likely is affected, e.g., by changing requirements of demand markets or supply disruptions. Second, it is very likely that the crisis also affects the supply chain and the whole business environment. Third, policy makers probably change or adapt legal and regulatory conditions under which companies and supply chains are operated.

The crisis situation needs to be analyzed and reflected by decision makers from management and business administration, as well as by policy makers from government and public administration. This analysis needs to reveal which changes and adaptations are required and how the objectives have to be adjusted in order to cope with the new situation caused by the pandemic. Recent studies show that objectives substantially changed as a reaction to the COVID-19 pandemic. On the intraorganizational level, car producers strived for centralized management models while computer manufacturers tried to take advantage of their global supply networks [Ishida, 2020]. Supply chains and their members may complement their main objective to maximize profit by additional objectives to restore systems operations and performance and to secure the society with product supply [Ivanov, 2020b]. Objectives of governments and policy makers also changed and, in addition, differed between countries and varied over time. For example, in the early phase of the COVID-19 pandemic, the legal authorities in Germany were very reluctant to set up containment measures and later implemented a lockdown as a “curve flattening” measure, which was much stricter than the measures taken by the Swedish government, which aimed at achieving herd immunity and widely relied on the common sense of the people as a collective ([Jung et al., 2020]; [Orlowski and Goldsmith, 2020]). The U.K. government first followed a herd immunity strategy and strived for getting 60% of the population recovered from infection before they substantially changed the strategy and tried to reduce the number of infections by a lockdown, which was much stricter than the one in Germany [Hunter, 2020]. Large differences between the objectives of different governments as well as considerable and rapid changes in the strategy and the objectives of legal authorities are apparent. Clearly, the governmental reactions to the COVID-19 pandemic strongly affected companies and supply chains, as illustrated by, e.g., lockdown impacts on manufacturing firms [Rapaccini *et al.*, 2020] or the Defense Production Act invocated by Trump administration and its resulting implications for the U. S. industry in general and American car manufacturers in particular ([Cecire and Peters, 2020]; [Leary, 2020]). Hence, it is recommended that supply chain managers adjust their objectives and align them (as good as possible) with governmental strategies and objectives of policy makers.

In Table 4, we propose in total 13 business objectives for companies and supply chains and 7 governmental objectives for policy makers to deal with the COVID-19 pandemic. These objectives are inspired by the ongoing political debate and business adjustment observed during the time of the crisis. We recommend decision makers to consult the list, because this may help them identifying objectives which they were not aware of before.

Decision making requires defining priorities and making tradeoffs, e.g., between financial and nonfinancial objectives ([Brandenburg, 2018]). Such tradeoffs may change in times of crises such as the COVID-19 pandemic. For example, the price may have been the dominant objective for supplier selection before the pandemic, while ensuring raw material supply capacity may have become most important during the pandemic. Therefore, we recommend that decision makers in companies carefully analyze current developments, anticipate future trends and, if necessary, adjust their priorities and tradeoffs to ensure high-quality decision making.

Moreover, the business objectives need to be defined under consideration of and aligned with governmental objectives. In times of crisis, a continuous communication between managers and policy makers, ideally complemented by workshops or task forces, is recommended to ensure the alignment of objectives. Such a collaboration is beneficial for managers and politicians, because both aim at the same target group of individuals, which the ones call customers or consumers and the others citizens.

It is noteworthy that a set of objectives of a company can never be final. Companies have to continuously adapt to their environment in order to survive and prosper. Pedersen *et al.* [2020] segmented the COVID-19 pandemic into three phases of crisis (emergence, occurrence, and aftermath), which are framed by the precrisis and postcrisis phases. For most organizations, the relevant objectives probably differ between all these phases. Therefore, we suggest that companies, after they have identified and defined their set of initial objectives, should adapt their objectives on a regular basis. Figure 1 illustrates the respective iterative process of defining, aligning, and adjusting objectives.

Table 4. Examples of Business and Governmental Objectives in Times of the COVID-19 Pandemic.

Business objectives	Governmental objectives
• Minimize the probability of being affected by a crisis • Minimize the negative impact of crisis • Recognize potential crises early • Strengthen position during the crisis • Consider potential crises in non-crises-times in decision making (e.g. producing in Europe, local, etc.) • Maximize health of employees and customers • Minimize negative health impact on society • Improve reputation • Find the best partners for the supply chain of the future • Anticipate and consider potential changes in consumption • Maximize cleanliness • Ensure delivery capacity • Maximize resilience	• Save as many lives as possible • Save as many life-years as possible • Prevent the public health system from collapsing • Achieve herd immunity as soon as possible • Minimize costs • Minimize economic damage • Maximize quality of life of citizens

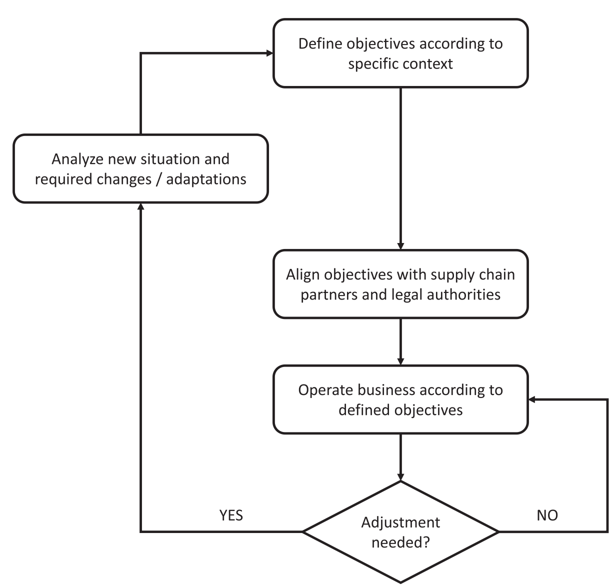

Figure 1. Iterative process of defining, aligning and adjusting objectives.

V. Conclusion

Although a clear set of objectives is the fundamental prerequisite of effective decision making, many managers are not fully aware of all relevant objectives of their company. The question whether an objective is relevant or not depends on the values and the strategy of an organization. Choosing the relevant objectives is an important task with substantial consequences that must not be underestimated. We, therefore, recommend decision makers to spend effort to identify a comprehensive set of objectives of their firms and to align them across their supply chain(s) and with their government(s).

Motivated by these circumstances and the COVID-19 pandemic, we developed approaches for defining and aligning objectives for decision making. In the study at hand, we provided simple guidelines for decision makers how to identify intraorganizational objectives and how to align them across the supply chain and with policy makers. Furthermore, we provided examples of intraorganizational and interorganizational objectives for normal times and for times of a crisis. In addition, we outlined an iterative procedure how to update the objectives on a regular basis.

The contribution of our study is threefold. First, we emphasized the need to broaden the perspective of decision making from the intraorganizational and interorganizational level of firms and their supply chains to the alignment with objectives defined by the policy makers from the socio-political environment. Second, we proposed procedures for identification and alignment of objectives on microlevel, mesolevel, and macrolevel under consideration of Keeney's [1992] idea of value-focused thinking. Third, we outlined a procedure to adjust the set of objectives during and after a crisis. We illustrate this procedure at the example of the COVID-19 pandemic and develop an iterative process of defining, aligning, and adjusting objectives.

Like any scientific study, the presented one has its limitations. Processes for identification and alignment of intraorganizational and interorganizational objectives were outlined, but aspects of operationalization of these objectives in a firm or a supply chain were deliberately omitted. For this important aspect of decision making and management control, we refer to earlier studies (e.g., [Brandenburg, 2018]).

Researchers often take optimization criteria or objective functions for granted. The list of objectives relevant to supply chain decision making before, during, and after the COVID-19 pandemic could inspire researchers to include additional objectives in their optimization models. Moreover, identifying and harmonizing objectives on the intraorganizational and interorganizational level is an important field for further research because the objectives provide the basis for decision making, which ultimately shapes the supply chains. Thus, we address the following questions for future research.

1) How can a dynamic process for identifying objectives be implemented on an intraorganizational level? Which instruments can foster such a process?
2) How can intraorganizational and interorganizational objectives be harmonized transparently, fairly, and effectively?
3) How can policy makers identify and evaluate adequate counter measures under consideration of different perspectives in times of crisis?

Overall, we can say that defining and aligning objectives within a single firm, across the supply chain, and with the socio-political business environment is crucial for business success before, during, and after times of a crisis or pandemic.

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