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# Towards a Reference Mission Map for Performance Measurement in Humanitarian Supply Chains

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**Abstract.** Research on performance measurement in humanitarian supply chains is scant. Experiences with developing performance measures in commercial environments show that it is particularly important to understand linkages between higher level goals and performance measurement, for example through using strategy maps in for-profit organisations or mission maps in non-profit organisations. In this article, we use literature and four mini-case studies in humanitarian organisations to develop a reference mission map for a humanitarian supply chain. This reference mission map may be used by humanitarian organisations to develop an organisation specific mission map for their supply chain.

**Keywords:** Performance measurement, humanitarian supply chain management, humanitarian logistics, mission maps, balanced scorecard.

## 1 Introduction

It has been widely recognised that there is a need for performance measurement in humanitarian supply chains [1-4]. Recently, several publications have paid attention to the development of performance metrics [5-8] and conditions for success of performance measurement in humanitarian supply chains [9]. However, to date, performance measurement has not been developed and implemented systematically in the relief sector [3, 6]. Performance measurement systems currently known have typically been developed for business organisations and not for non-profit organisations such as humanitarian organisations. Although many aspects of commercial supply chains may be similar to their humanitarian counterpart, the direct transfer of findings will be challenging [2]. However, profit sector based performance measurement frameworks are a useful starting point for the non-profit sector [10].

The most common performance measurement framework in the profit sector is the Balanced Score Card [11]. Also in the relief sector, the Balanced Score Card (BSC) has been applied [8]. We therefore take the BSC as a starting point for our discussion on developing performance measurement in humanitarian supply chains. When implementing and using the BSC in industry, executives identified a missing link between performance metrics and strategy [12]. To cope with this "... the main constituencies of the [performance measurement] model and the cause and effect

relations between them should be identified” [13]. Kaplan and Norton developed the concept of a strategy map to fill this gap. Such a strategy map – or mission map in non-profit organisations – shows the cause-and-effect links by means of which specific improvements in areas created desired outcomes [12]. We aim to apply the concept of strategy maps as developed by Kaplan and Norton [12] in a humanitarian environment. Developing such a mission map compels non-profit organisations to set measurable and mission-oriented goals and to assess the progress of their operations towards these goals. These goals can then be used for systematic development of performance measures.

In this article, we set out to construct a reference mission map for a humanitarian supply chain. This map may be used to pick and choose themes from for making an organisation-specific mission map. We do not discuss the variety of performance measurement approaches, as there are several excellent overviews available that discuss this [cf. 14, 15]. We deploy an exploratory research design to increase our understanding of aspects to include in such a mission map, as there is no research available into humanitarian mission maps. Four different humanitarian organisations participated; they desired to remain anonymous for confidentiality reasons. Organisation A is a relatively small humanitarian organisation that mainly focuses on development activities; B is one of the largest non-governmental organisations (NGO) in the world with a broad scope of relief activities, and C is a large international NGO that mainly focuses on medical support. Organisation D is part of an inter-governmental organisation. For exploratory and theory-building research, case studies are often recommended [16, 17]. Although there are limitations to using case studies, we have followed methodological guidelines [16, 17] to increase the validity of our findings. We focused on a variety of organisations and developed an outline of a humanitarian mission map using literature; this map has been verified and expanded by means of interviews with managers responsible for supply chain processes in the four humanitarian organisations using a script; we have transcribed the interviews to increase content validity and respondents have reviewed interview records.

Below we review humanitarian supply chain literature. We discuss empirical data from four case studies in humanitarian organisations to develop a reference humanitarian mission map that can be used for designing performance measures. Last we provide conclusions and recommendations.

## **2 Four perspectives**

A balanced scorecard (BSC) contains four perspectives: a financial perspective, customer perspective, internal perspective, and a learning and growth perspective [12, 18]. The customer perspective deals with the question “how do customers see us”. The internal perspective of the BSC provides an answer to the question “what must we excel at”. The learning & growth perspective covers an answer to the question “how can we continue to improve and create value” and the financial perspective deals with improving the bottom-line of an organisation. In order to develop a humanitarian mission map, we investigated humanitarian supply chain literature on each of the four perspectives using the strategy maps framework of Kaplan and

Norton [12, 18] as a reference. **Table 1** provides a brief overview of literature from the humanitarian sector on each of the four perspectives, which we only provide in summary. Consecutively, we used the results of the four case studies to develop a reference mission map for humanitarian supply chain management. Below, we will first discuss the case study input on each of the four perspectives. The reference mission map is we developed based on this input is discussed afterwards.

**Table 1.** Literature overview balanced scorecard perspectives in the humanitarian supply chain

Perspective	Content [12, 18]	Humanitarian sector examples
Customer	Product and service attributes	Right supplies at the right place and time for those who need it most [19]; speed of delivery [1, 20]
	Customer relationships	There are different customers in a supply chain simultaneously with different requirements [21]
	Image	Branding conflicts with ideals of voluntarism, altruism and democracy connected to humanitarian agencies [22]
Internal	Operations management	Provide excellence from field needs assessment to delivery in the field [23]
	Customer management	Donors want to know their money is used well [24]; need to manage a diversity of customers [21]
	Innovation	Need for flexible technology solutions [25]
	Regulation & social	Focus on environmental issues [25] Employment of locals [26] Comply with government regulations [26]
Learning & Growth	Human capital	Appropriate logistics knowledge required and not available [2, 21]; manage high field personnel turnover [25, 27]
	Information capital	Create visibility and foster transparency required [28]; good information management is critical [2, 20]
	Organisational capital	Profit incentives to perform certain actions are not like private companies [19]
Financial	Manage revenue	Ensure sufficient and timely donor funding [20, 21]
	Manage costs	Track spending of money [20]; focus on efficiency [29]

## 2.1 Case study results: customer perspective

With regard to product and service attributes, all agreed that for beneficiaries, quality, availability and speed are key attributes. Organisation C mentioned that efficiency is relevant as donors pay attention to this. Organisation B indicated that reliability of delivery needs to be included. They indicated that unreliable deliveries of supplies to camps may lead to unrest. Organisations B and D furthermore argued that relevance is a key attribute. Organisation D quoted an example where shelter was provided to people who did not accept shelter because of their religious backgrounds.

The interviewees argued that there are three kinds of key customers: donors, intermediaries such as government or implementing partners, and beneficiaries. All indicated that donors request insight into the costs of the project and expect efficient and effective operations – although organisation D added that donors often do not have good means to measure that. In terms of building customer relationships, interviewees were focusing on donors, though that depended on strategy.

Organisation B did not invest much in donor relationships as they focus on smaller (private) donors, which was different from the other organisations interviewed.

With regard to corporate image, all four organisations argued that trustworthiness and reliability are key aspects of their image. Organisation D furthermore indicated that they strive for a sustainable supply chain, minimising environmental impact.

## 2.2 Case study results: internal perspective

All interviewees agree that operations management processes entail activities from needs assessment to final delivery and that operational excellence in these processes is a prerequisite for success in a supply chain. The agencies interviewed used different strategies to target, acquire and manage donors. Organisation A rather keeps few large donor organisations instead of many small to keep time and effort needed for donor management reasonable and to manage the substantial influence that donors typically have on the execution of the processes because of their special demands. Organisation B indicated that they focus on private non-institutional donors; they are then more independent to take their own decisions as funds are typically not earmarked. All considered feedback to donors about field performance essential. Organisation D added that donors often do not have the capacity or interest to check supply chain related aspects such as the performance of the supply chain towards beneficiaries.

Organisation A always sets up a partnership with the central or local government of a country as the support and the activities of the humanitarian organisation need to be in line with the political objectives of a government. Organisation C tries to stay as independent as possible and therefore does not see the government as a key partner. They may sign an agreement with a government but that is only to grant admission to an area. Organisation D quoted one example of an ambulance that was shipped and got lost in the customs clearance process. Only through using contacts within government it was possible to trace back the vehicle quickly. Organisation D indicated that there are many different intermediary parties to manage and the targeting, acquisition and building of partnerships with them is key. Typically, they work with partners to perform final delivery to beneficiaries. In some countries they run operations with one partner while in others with tens of different partners.

Innovation is gaining attention among the organisations interviewed. Organisation A focused on process innovation, e.g. by having more beneficiaries involved in support processes from an early stage of the operation onwards. Organisation D indicated they are active in the development of more durable tents and that they are starting to use GPS technology to map refugee camps and trace vehicles. Organisation C quoted an example of service innovation: they use identity cards with chips for beneficiaries in refugee camps. Through these cards refugees can be recognized fast and be supplied with exactly the products and services they need.

All organisations interviewed argued that regulatory and social processes are key aspects to account for. Organisation C indicated they more and more depend on permissions of governments to perform their work. They have to stick to labour laws and they need a high community acceptance. To be able to deal with local cultural issues two interviewees argued that it is advisable to engage an anthropologist who can recommend solutions about how to deal with local cultural challenges. Such

action could lead to more and faster community acceptance and avoid issues as quoted by organisation D that e.g. tents supplied to refugees were not accepted because of religious beliefs. Organisation A focused on involving local people to support the people who live in refugee camp. For specific jobs, they only hired locals, e.g. for installing water pumps. One aspect that also requires attention is the environmental impact. Organisation D indicated that their suppliers more and more are judged on sustainability aspects and that they would like relief activities be more focused on sustainability as well, e.g. by mainly using fuel efficient vehicles in areas where four-wheel-drives are not really necessary (such as cities).

### **2.3 Case study results: learning and growth perspective**

All organisations acknowledged the need for logistics training and a focus on managing high turnover of functions in the field. They argued more attention should be given to developing and expanding skills and to keeping skills and capabilities in-house. Organisation A for example installed explicit requirements for the level of training of their local employees and organisation D was in the process of developing standard job descriptions. All interviewees agree that within learning and growth the human capital is by far the most important element.

All interviewees also identified that information capital is crucial and not developed significantly in humanitarian supply chains. Organisation A argued that information is mostly shared with other people in meetings instead of using computers and information systems. Organisations B, C and D already use standard logistical information systems covering a large part of their supply chain. Supply chain information such as inventory levels is becoming available but is not complete yet. However, organisation D argued that particularly the adherence to procedures is a big issue in information management, e.g. stock is booked in the system incorrectly.

All organisations argued that fostering a culture of teamwork within the organisation and with partners is key to humanitarian aid. Organisation A furthermore added that in many cases international expat employees are flown in at decision-making positions. However, since they often do not stay long in country it is crucial to develop local leadership capacity. If a humanitarian organisation then leaves a country local workers have the capabilities to take over and continue activities.

### **2.4 Case study results: financial perspective**

The four organisations all manage the financial perspective - managing funding, budgets and costs - differently. Organisation A uses a plan of activities to ensure steady donations from institutional parties. Typically, they will not deviate much from plans. Organisation B and Organisation C make a yearly budget for all ambitions of the organisation and then identify required funds. Organisation B has few large donors in order to spend budgets as independent from donors as possible. Organisation D has a budgeting procedure for regular support activities and an emergency procedure to obtain extra funds from institutional donors in case disaster strikes. All organisations tightly monitor costs.

Customer	Product and service attr.		Customer Relationships			Image
	High quality High availability Sufficient quantity	Speedy delivery Reliable delivery Relevance	<u>To donors:</u> Ensure efficient and effective processes Provide feedback and information	<u>To intermediaries:</u> Provide relevant and timely service Provide feedback and information	<u>To beneficiaries:</u> Provide relevant and timely service	Be a reliable and trustworthy partner Provide sustainable relief aid
Internal	Operations manag.	Donor manag.	Partner management		Innovation	Regulatory & social
	Create operational excellence in processes from needs assessment to delivery	Target, acquire, and retain donors Provide feedback to donors	<u>Local governm.</u> Build partnerships with local governm.	<u>Intermediaries</u> Target, acquire, retain partners and build partnerships	Identify, develop and manage new product and services	Ensure compliance with regulations Be socially, environmentally, and culturally engaged
Learning & growth	Human capital		Information capital		Organisational capital	
	Build and expand supply chain skills and competencies and manage job turnover		Develop, utilise and capitalise on supply chain ICT		Nurture local leadership and foster team work internally and with partners	
Financial	Budgeting		Funding management		Cost management	
	Develop, monitor and adjust budgets		Ensure steady and timely flow of donations		Ensure efficient use of funds in a transparent manner	

Fig. 1. Reference mission map for humanitarian supply chain management

### 3 Discussion, conclusions and future research

Based on the above, we have compiled a reference mission map in Fig. 1. Compared to the Kaplan and Norton framework there are a few aspects that stand out in a humanitarian supply chain. In the customer perspective, there are different relationships with different customers simultaneously, cf. Oloruntoba and Gray [21]: not only beneficiaries but also donors and intermediary parties are customers in the supply chain at the same time. For all these customers, relevancy of products and services stands out; beneficiaries are not really demanding voices contrary to customers in commercial transactions; in fact, they have little choice [27].

The internal perspective deals first with donor management, focusing on excellence in selecting, acquiring, retaining and collaborating with donors to ensure and grow funding. Secondly, agencies need to manage partners. Humanitarian organisations work with many players and these relations often turn out to be unsatisfactory [21] and thus require close attention. Partner management deals with local government of the host country - good relationships with government are essential to get shipments into a country without delay. It also deals with intermediaries in delivery of aid to beneficiaries – whether it is other NGO-s or for example a third party logistics service provider. Though deemed important, innovation - both in products and services - will continue to be a challenge since typically there is little time and money for being prepared [1, 19]. Last, like in the

commercial world, it is becoming more and more important for agencies to take account of the environment as well as social impact. Humanitarian organisations therefore need to account for sustainability, e.g. in their sourcing activities, and increasingly involve local people (e.g. by sourcing more products locally).

The learning and growth perspective is not unlike its commercial counterpart. Humanitarian agencies have challenges in managing human capital [2, 27] and in information systems deployment [19]. The financial perspective focuses mainly on funding management (which would be the revenue aspect in a commercial BSC). Many agencies do not have the means to provide services without first obtaining the necessary donor funds [25, 29]. Particularly receiving funding for preparatory activities instead of direct funding of disaster operations is difficult to achieve [25]. If funding depends on many (small) private donors, the execution of a supply chain strategy that focuses on preparation instead of mainly response is typically easier.

Performance measurement in humanitarian supply chains is in a nascent stage. We presented a development approach based on a method that is popular in industry. There are other approaches, e.g. based on service quality management, that may provide interesting avenues for further research. An interesting research direction is to support mission maps with quantifiable cause-and-effect relations, along the lines of the study by Santos et al. [30], who used system dynamics models. This enables identification of strengths in cause-and-effect relations between aspects of a mission map. With the wealth of research on performance measurement in commercial settings it is furthermore interesting to understand where and how performance measurement implementation and use is different from the commercial world. An improved understanding of how to design, implement and use humanitarian supply chain performance measurement is a key lever for improving performance.

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