Università degli Studi di Ferrara

DOTTORATO DI RICERCA IN "ECONOMIA E MANAGEMENT DELL'INNOVAZIONE E DELLA SOSTENIBILITÀ"

CICLO XXXVI

COORDINATRICE
Prof.ssa EMIDIA VAGNONI

Navigating the humanitarian nexus: unveiling humanitarian supply chains, aid to assistance shifts, and AI synergies in International Organizations

Settore Scientifico Disciplinare SECS-P/07

Dottorando
Dott. Hiedemann Alexander Maximilian

Tutori
Prof.ssa Vagnoni Emidia

Anni 2020/2023

Table of contents

1. Introduction to the research

1.1 International Institutions: from the Congress of Vienna to present day

International Organizations (IOs) have emerged as a response to the imperative of sovereign states to engage collectively within the international milieu; they are committed to fostering cooperation, development, social well-being, and the maintenance of peaceful coexistence. While historical antecedents of treaties and alliances among states are evident across centuries, the formal institutionalization of IOs gained ascendancy in the 19th century.

The historical trajectory of international relations underscores the genesis of the first International Institutions (IIs) in the aftermath of the Napoleonic Wars, notably during the Congress of Vienna (1814–15) (Reinalda, 2009). This congress marked a seminal epoch, providing the conditions conducive to several European States to initiate a series of innovations, inventions and erudition, which coalesced to delineate the foundational contours of contemporary IIs. Additionally, the advent of the Industrial Revolution further catalysed the imperative for states to enhance collaboration, culminating in the establishment of organizations devoted to amplifying communication and facilitating economic exchange. Illustrative instances include the International Telecommunication Union (ITU) and the Universal Postal Union (UPU), both of which are still operational today.

Notably significant was the formation of the League of Nations (Mackenzie, 2010), an organization established after World War I to create a multilateral system of guaranteeing peace, security, and international cooperation. As a result of this experiment, the United Nations came into existence on 24 October 1945, in the aftermath of World War II, in conjunction with the establishment of the Bretton Woods institutions. These organizations collectively constituted a comprehensive framework for international relations, encompassing objectives that spanned the gamut from the preservation of peace and the cultivation of amicable relations grounded in the principles of equal rights and self-determination to the facilitation of international economic, social, cultural, and humanitarian cooperation, and the establishment of a robust global financial and monetary system.

The latter half of the 20th century witnessed an exponential proliferation in both the quantity and intricacy of intergovernmental organizations in a landscape that today encompasses upwards of 250 formal IIs, a United Nations system comprising more than 30 discrete entities, numerous regional and global Development Banks, and Supranational Organizations like the European Union.

1.2 Emergence of Humanitarian imperatives and disruptions in Supply Chains

The increasing complexity of the governance of IIs, coupled with the uncertainty of today's global scenario, places multilateralism at a nadir, posing challenges in countering geopolitical and geostrategic power dynamics by only focusing on the concepts of interdependence and collaboration. Clear examples of this are the:

- Covid-19 pandemic, a health crisis that weakened the international cooperation system with responses from various governments that have been for the most part fragmented and confined within national borders. This was a crisis that led, over the course of a few short months, to over 1.6 billion children worldwide being deprived of access to education, and up to 100 million individuals being plunged into extreme poverty (Hiedemann, 2020);
- Current international conflicts, such as the Russo-Ukrainian war and the Israeli–Palestinian conflict, with far-reaching consequences on global dynamics. For instance, the imposition of international sanctions on Russia is impinging on Africa's post-pandemic recovery, exacerbating the impact of climate disturbance in East Africa. This is manifested through food and energy shortages, escalating inflation, and a surge in commodity prices. Hence, the disruption of supply chains resulting from the conflict poses a direct threat to the region's socioeconomic stability, potentially exacerbating poverty and hunger (Mhlanga and Ndhlovu, 2023). Simultaneously, the escalating Israeli–Palestinian conflict is presenting formidable challenges for civilians, particularly vulnerable children and families in the affected area. Access to essential food supplies is increasingly compromised as food distribution networks face disruptions, and hostilities severely impede food production. The intensification of this conflict is compounding the existing humanitarian crisis, further intensifying the challenges faced by communities in securing basic necessities.

Consequently, the present global landscape not only undermines collaborative efforts undertaken in recent years to achieve collective objectives—such as the "Sustainable Development Goals", laid out in the 2030 Agenda, and the "New Agenda for Peace" introduced by UN Secretary-General António Guterres in July 2023—but also necessitates an unparalleled response from both public and private donors. In the year 2022 alone, international humanitarian assistance witnessed a remarkable increase of US$10.0 billion (27%), reaching a total of US$46.9 billion (Urquhart et al., 2023). This substantial surge was primarily fuelled by extensive support directed towards Ukraine. Moreover, as of June 2023, the exigencies of humanitarian assistance have escalated to US$54.9 billion, reflecting an approximately 80% growth as compared to the requirements pre-dating the Covid-19 pandemic in 2019 (Urquhart et al., 2023). These developments highlight not only the imperative for an extraordinary mobilization of resources but also the pressing need to:

- Comprehend the intricacies of supply chains in humanitarian aid;
- Explore innovative approaches in programme delivery, such as Cash and Voucher programmes, leveraging new technologies to optimize effectiveness, and demonstrating IIs' "Value for Money" to donors;
- Understanding the state-of-the-art applications of emerging technologies, such as Artificial Intelligence, to streamline processes and facilitate the interlink of this transformation with the need to keep a human-centred approach.

1.3 Exploring uncharted realms in management research

International Organizations (IOs), encompassing International Institutions (IIs) and International Non-Governmental Organizations (INGOs), have been extensively scrutinized in the international literature across various disciplines, ranging from international relations to the political sciences. Concurrently, a discernible shift is underway, indicating that these entities are transitioning from an "administration" model to a "management" paradigm, akin to developments observed in domestic public and non-profit organizations. Despite this evolution, a managerial perspective on the analysis of IOs has only recently gained traction, as evidenced by a growing number of articles appearing in international journals. The majority of these journals are still policy-oriented and sector-specific (e.g., Marine Policy, Environmental Science and Policy, Land Use Policy, Environmental Policy and Law, Water Policy), while only a few publications delve into "management" paradigms in related journals (e.g., Academy of Management Journal, Journal of Business Ethics). This body of work, while valuable, often lacks systematic categorization of practices within IOs, tailoring its focus to the distinct institutional and operational peculiarities characterizing these organizations. Additionally, a substantial portion of the literature in this domain primarily originates from professional concept papers and progress reports released by individual organizations such as the European Commission Humanitarian Aid (ECHO), the United Nations Office for the Coordination of Humanitarian Affairs (OCHA), the United Nations International Children's Emergency Fund (UNICEF), and the World Food Programme (WFP).

This observation holds particularly true when examining academic literature specifically related to the three pressing needs identified. For instance, a scrutiny of the Scopus database reveals that:

- When focussing on publications on supply chains in humanitarian aid, only 60 articles and 4 reviews have been published between 2011 and 2021 in the field of "Business, Management, and Accounting" and "Social Sciences" (keywords searched in title and abstract: "supply

chain" AND "humanitarian aid" OR "humanitarian assistance"). Of these publications, only 11 focus on IOs and many (45%) were published between 2020 and 2021;

- Shifting attention to innovative approaches in programme delivery, and in particular Cash and Voucher programmes, only 7 articles with a specific emphasis on the adoption of "Voucher" in humanitarian aid or assistance have been published (between 2013 and 2021, with no results prior to 2013) in the field of "Business, Management and Accounting" and "Social Sciences". Of these, only 3 have a focus on IOs;
- Lastly, when exploring publications in the area of emerging technologies, such as Artificial Intelligence, only 5 articles and 2 reviews with a specific emphasis on the adoption of "Artificial Intelligence" in humanitarian contexts have respectively been published in the fields of "Business, Management, and Accounting" and "Social Sciences". Of these, only 2 articles and 1 review have a focus on IOs.

This scarcity of scientific evidence accentuates the early-stage exploration of this pivotal intersection within the expansive domain of IO management research, and emphasizes the importance of advancing a research agenda specifically tailored to multifaceted organizations with far-reaching impact. In particular, in a scenario in which supply-chain disruptions pose a threat to the achievements made in alignment with the Sustainable Development Goals (SDGs), the need for comprehensive inquiry and scholarly attention to this subject matter becomes increasingly apparent.

1.4 The aim and objectives of this research

The overarching aim of this dissertation is to comprehensively explore and understand the management paradigms adopted by IOs in response to contemporary global challenges. Through a multi-faceted approach, the research aims to shed light on the intricate dynamics shaping IOs, with a specific focus on pressing needs related to humanitarian operations, supply chain management, Cash and Voucher Assistance programs, and the integration of AI.

In the initial research output (Section 2), the primary objective is to establish a robust foundational understanding of humanitarian supply-chain management. This involves delving into the components, roles, and critical success factors that shape the complex landscape of managing supply chains in humanitarian contexts. Additionally, the research aims to develop a maturity framework, offering insightful perspectives into the varying levels of maturity within humanitarian supply chains, and proposing strategic approaches for heightened agility, leanness, and reliability. The research also initiates a preliminary exploration into the impacts of emerging trends, specifically the adoption of Cash and Voucher Assistance, on humanitarian operations. These are further explored in the following research (Section 3), in which the focus

shifts to an examination of the ongoing transformation within humanitarian organizations, particularly the transition from traditional aid to innovative assistance modalities, with a central emphasis on Cash and Voucher Assistance (CVA). Objectives include analysing the associated benefits, risks, and implications of CVA, and developing a framework that adapts the McKinsey 7-S Model to suit the unique operational characteristics of humanitarian organizations. The research also investigates the positive impacts of CVA on beneficiaries and local economies.

The final research output (Section 4) centres on understanding the implications of adopting emerging technologies, particularly AI, with a specific focus on the implication for IOs from an HR perspective (referred as "Skillset and Capacity Building" of the framework suggested in Section 3). To do so, the research not only explores AI, but also delves into the human-related impacts of Artificial Intelligence in the public sector, uncovering challenges and advocating for a “human-centred” approach to the ongoing digital transformation. To contribute to the limited existing literature, the research systematically reviews the state-of-the-art applications of AI in International Organizations, providing insights into current usage and potential future developments.

Through the interconnected pursuit of these research objectives, this study aspires to make a substantive contribution to the scholarly discourse surrounding the evolving management paradigms of IOs within the intricate landscape of contemporary global challenges.

1.5 The methodology

In order to undertake a meticulous examination of the three pressing needs delineated, this research is structured around three papers. Each of these papers contributes uniquely to the explication of a specific focal area, thereby advancing the overarching objectives of this dissertation. The distinct academic pursuits are articulated as follows:

- To elucidate the intricacies of supply chains in humanitarian aid, the data collection methodology identified was mainly based on qualitative research. This method, as posited by Bradley et al. (2007), is a promising way of comprehending phenomena within their contextual milieu, elucidating interconnections among concepts and behaviours, and iteratively formulating and honing theoretical constructs. Augmenting the methodological rigor, the application of cross-validation, drawing upon diverse data acquisition strategies (Thurmond, 2001), is employed to increase the robustness of the research outcomes;
- In the examination of innovative paradigms in programme delivery, specifically focusing on Cash and Voucher program, this study employs a triangulation strategy, drawing from two distinct data-collection methodologies to ensure and validate the coherence of findings, as advocated by Williamson et al. (2002). Consistent with Bryman (2008), data was collected in multiple ways, not limiting the scope to desk analysis. The first method is a literature review

of papers published between 1990 and 2021 using two online databases (Scopus and Web of Sciences). Additionally, an extensive review of reports, studies, reviews, and articles is conducted, with a specific emphasis on official documentation from the World Food Programme (WFP). As an integral component of the second facet of the triangulation method, semi-structured interviews of 15 anonymous WFP employees were carried out, focusing specifically on the subject of CVA–also referred as Cash-Based Transfers (CBT). This methodological diversity aims to enrich the depth and breadth of insights garnered. Furthermore, the utilization of the WFP as a case study is justified by its status as one of the pioneering IOs to undergo strategic reorientation, attaining a commendable level of expertise in the process. The detailed observations gleaned from this case study enable a multifaceted examination of various dimensions, facilitating an exploration of their interrelationships within the overarching context. This approach aligns with Gummesson's perspective (1988:76) on utilizing researchers' capacity for understanding complex phenomena. In accordance with Hartley's assertion (1994), case studies are particularly suited for investigating nascent processes and behaviours, or those that are inadequately understood. Thus, this methodological approach harmonizes effectively with the primary aim of this study, which seeks to provide an initial response to the questions of the "how" and "why", in accordance with the insights offered by Leonard-Barton (1990). The strategic selection and thorough analysis of the WFP case study serve as a robust foundation for comprehending the nuances of innovative programme delivery approaches, contributing substantively to the broader objectives of this research;

- In the exploration of the state-of-the-art applications of Artificial Intelligence in IOs, a methodical approach incorporating a systematic literature review utilizing the PRISMA methodology to discern articles that meet the specified eligibility criteria, as outlined by Liberati et al. (2009), was employed. Supplementary literature beyond the stipulated date range was incorporated selectively, guided by its specific relevance to the study. Secondly, in order to assess the status of organizational preparedness for human-centred digital transformation, the study relied on a survey and semi-structured interviews on the status of preparedness for digital transformation in the public sector. Aligned with the research objectives, individuals in the pool of professionals who willingly volunteered for interviews were deliberately chosen. This selection process aimed to afford the research the chance to delve into diverse and comparative case studies at the IO level. This strategic approach sought to address potential challenges associated with generalization, particularly those arising from analysing a limited number of cases within an excessively broad sector (Pettigrew, 1990; Eisenhardt, 1989). Additionally, specific interviewees were detected through a strategic application of snowball sampling, grounded in suggestions from

informants. This approach aimed at securing information-rich cases from individuals directly engaged in the realms of digital transformation or change management, thereby enhancing the depth and richness of insights. Finally, the analysis required original organizational and departmental documents to be gathered in order to collect background data, double check interviewees' answers, and ensure the accuracy and reliability of the findings within the context of the broader study on AI applications in IOs, and organizational preparedness for digital transformation.

References

Bradley E.H., Curry L.A., Devers K.J. (2007) *Qualitative data analysis for health services research: developing taxonomy, themes and theory*. Health Services Research;42(4), pp. 1758-1772.

BrymanA. (2008) *Social Research Methods.* (3rd ed). New York: Oxford University Press.

Eisenhardt, K. M. (1989) *Building Theories from Case Study Research. The Academy of Management Review*, (14)4, pp. 532-550.

Gummesson E. (1988) *Qualitative methods in management research*. Lund, Norway: Studentlitteratur, Chartwell-Bratt.

Hartley, J. F. (1994) *Case studies in organizational research. In Qualitative methods in organizational research: A practical guide*, edited by C. Cassell and G. Symon, 209–229. London:Sage.

Hiedemann A. (2020), *Covid-19 and the crisis of multilateralism*, SDA Bocconi Insight (https://www.sdabocconi.it/en/sda-bocconi-insight/zoom-on/economics--society/covid-19-and-the-crisis-of-multilateralism).

Krafcik J.F. (1988a). *Comparative analysis of performance indicators at world auto assembly plants*, Master thesis, Massachusetts Institute of Technology, Cambridge, MA.

Leonard-Barton,D. (1990) *A dual methodology for case studies: Synergistic use of a longitudinal single site with replicated multiple sites*. Organization Science, 1 (3): pp. 248– 266

Liberati A, Altman DG, Tetzlaff J, Mulrow C, Gøtzsche PC, Ioannidis JPA, et al. (2009) *The PRISMA Statement for Reporting Systematic Reviews and Meta-Analyses of Studies That Evaluate Health Care Interventions: Explanation and Elaboration*. PLoS Med 6(7): e1000100.

Mackenzie, D. (2010) *The League of Nations*, in A World Beyond Borders: An Introduction to the History of International Organizations, vol. 1, University of Toronto Press, pp. 9–32. JSTOR.

Mhlanga, D., Ndhlovu, E. (2023) *The Implications of the Russia–Ukraine War on Sustainable Development Goals in Africa*. Fudan Journal of the Humanities and Social Sciences, Vol. 16, pp. 435–454.

Patton, M.Q. (2002). *Qualitative Research and Evaluation Methods*. Sage Publications.

Pettigrew, A. (1990) *Longitudinal field research on change: theory and practice.* Organizational Science (1)3, pp. 267-92.

Reinalda B (2009) *Routledge History of International Organizations: from 1815 to the present day* (London, Routledge, 2009).

Thurmond V. A. (2001) *The point of triangulation*. Journal of Nursing Scholarship; 33(3), pp. 253-258.

Urquhart A., Mason E., Girling-Morris F., Nelson-Pollard S. (2023) *Global humanitarian assistance report 2023*, in Development Initiatives, Section 1.

Williamson K., Burstein F., McKemmish S. (2002) *Research Methods for Students, Academics and Professionals* (Second Edition), Information Management and Systems, pp. 25-47.

2. Supply Chain Management in Humanitarian Operations

2.1 The Humanitarian Supply Chain

In essence, a Supply Chain (SC) is a network of suppliers, manufacturers, distributors, retailers and customers. However, to fully understand the SC within the humanitarian context, a fundamental starting point is how it is defined by the global industry as a whole, as reported in the business literature. In this regard, the Council of Supply Chain Management Professionals (CSCMP) offers a meaningful, cross-sectorial definition, describing SC as 'the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities until the finished product reaches the end consumer'. The Chartered Institute of Procurement & Supply (CIPS), on the other hand, emphasizes the highly specialized and inter-organizational nature of SC in their claim that, 'most supply chains consist of many separate companies, each linked by virtue of their part in satisfying the specific need of the client'. The American Production and Inventory Control Society (APICS), for their part, highlight the competitive and strategic value of SC; they assert that the design, planning, execution, control, and monitoring of SC activities should be targeted towards 'creating net value, building a competitive infrastructure, leveraging worldwide logistics, synchronizing supply with demand, and measuring performance globally. To build a robust SC network, four types of assets need to be organized into carefully designed and closely coordination 'flows'. These flows are:

- *Financial:* how contributions from public and private stakeholders can be mobilized in a timely and efficient manner, being allocated to managers of operations for the procurement of essential goods and physical assets in a manner that provides value for money;
- *Material:* the pathway from physical product procurement to distribution to beneficiaries, including the means by which they are shipped (both internationally and internally) and made available, and the reverse journey for servicing and product returns;
- *Human resources:* how, when and where the humanitarian sector workers are deployed operationally;
- *Information:* this includes information on needs, demand for goods and tracking of shipment delivery/distribution and order fulfilment is coordinated among actors, as well as information on distribution of labour on the ground and thematic tasks to be completed.

All the above is true for the humanitarian SC, which, however, may be better defined as: 'the process of planning, implementing and controlling the efficient, cost-effective flow, storage and distribution of goods and materials as well as related information, from point of origin to point of consumption for the purpose of meeting the end beneficiary's requirements' (Thomas and Mizushima, 2005).

2.2 The role of the Supply Chain in Disaster Management

In order to fully appreciate the role and importance of SC management in the humanitarian context, it is necessary to understand the environment in which it is called upon to operate. In other words, at least an overview of the different types of emergencies (or "disasters") and the main phases of humanitarian assistance cycle is required.

2.2.1 Disaster Classification

A humanitarian "disaster" has been define as a 'disruption that physically affects a system as a whole and threatens its priorities and goals' (Van Wassenhove, 2006). The International Strategy for Disaster Reduction (UN/ISDR, 2004) has published a classification of disasters that is widely accepted. Differentiated by the main cause or triggering event (whether man-made or natural) and the rapidity and predictability of their occurrence (sudden- or slow-onset), the International Strategy for Disaster Reduction system includes four main categories:

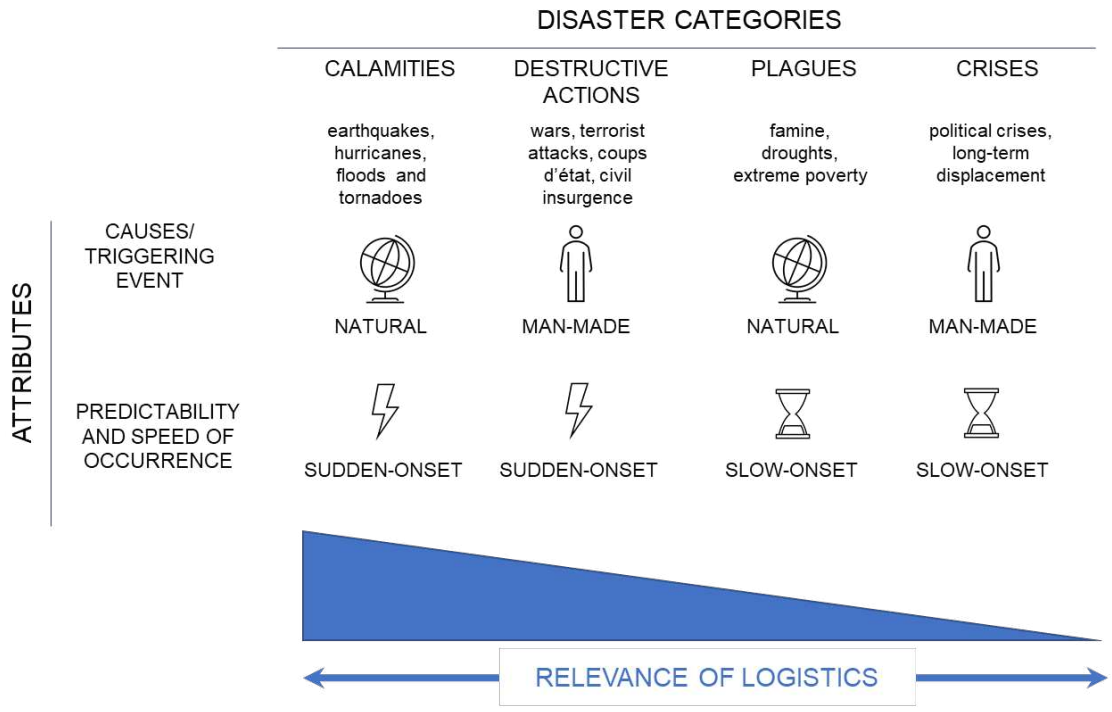
- *Calamities:* floods, tornadoes, hurricanes, earthquakes and other natural events;
- *Destructive actions*: wars, civil insurgence, coups d'état, terrorist attacks, industrial accidents and similar events of human cause;
- *Plagues*: a category which includes famines, droughts and extreme poverty;
- *Crises*: such as political and refugee emergencies.

Although good SC management is essential for an effective response to any humanitarian disaster, as shown in Figure 1, greater logistic effort, in terms of technical know-how expenditure and infrastructure, must be deployed in the event of calamities and destructive actions. This is because their sudden onset in devastated areas necessitates an urgent response, making preparedness and agility crucial factors in their efficacy. Since the turn of the millennium, humanitarian organizations have been challenged to respond to a growing number of disasters. Climate change has resulted in devastating natural calamities contributing to the complex social and environmental dynamics driving severe hunger, and major armed conflicts are destroying lives, forcing countless people to lose their livelihood and become displaced persons. Pandemics and sanitation emergencies have caused widespread disruption of healthcare services on a global scale, with consequent impacts on the world's economy. The severity of the situation and its deteriorating trend are reported in the 2022 Global Humanitarian Overview (OCHA, 2022), which highlights the following key trends and statistics:

- Climate-related disaster events are increasing in frequency and becoming more varied in nature, increasing levels of vulnerability and risk. Indeed, an average of 412 climate-related disasters per year were recorded between 2010 and 2020, as compared to an annual average of 239 event between 1980 and 1990. In 2020 alone, such events affected 98.4 million people, causing economic damage that is estimated at $171.3 billion;

- Food insecurity is at unprecedented levels, and famine conditions have been worsened by a combination of factors including the impact of extreme weather on crops, conflict, COVID-19-related SC disruptions and increasing transportation costs, leading to long-term economic vulnerability, with 283 million people around the globe estimated to be malnourished, up from 161 million in 2019;
- Forcible displacement of people reached an all-time high by the end of 2020, at a total of 82.4 million. This includes 48 million Internally Displaced Persons (IDPs) and 26.4 million refugees (countries most affected include Syria and DRC). The situation was further compounded by a dramatic increase after the invasion of Ukraine (according to IOM-UNHCR data, 7.1 million IDP and 5 million refugees as of early April 2022);
- Economic pressure on global healthcare has also been inflated, especially between 2020 and 2022, with its response to pandemics. For COVID-19 assistance alone, an estimated US$ 16.8 billion was spent, US$ 6 billion of which on vaccines, US$ 4.7 on laboratory diagnostics, US$ 2.5 billion on treatments, including pharmaceutical and respiratory care, and US$ 3.7 billion to strengthen healthcare systems' resilience and response capacity.

Figure 1. Categorization of disasters



Source: adapted from UN/ISDR, 2004

2.2.2 The Disaster Management cycle

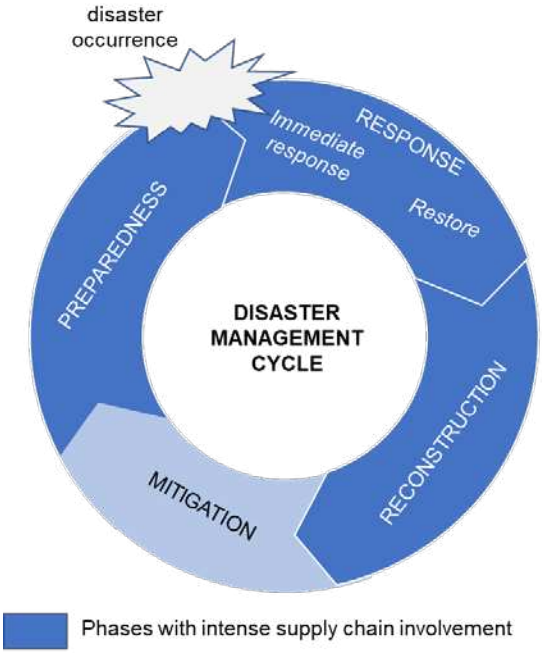
SC management and logistics are called upon to play variable roles across the "Disaster Management cycle", as illustrated graphically in Figure 2 (Coppola, 2015). The main phases of the cycle and the role played by supply chain management can be described as follows:

- ***Preparedness:*** this phase involves the various operations that must be enacted before a disaster strikes. It incorporates strategies to allow the implementation of a successful operational response, including definition of rapid response plans based on likely emergency scenarios and pre-positioning of essential goods in regional hubs. Networks and coordination mechanisms are set up by the key humanitarian operations managers, who will run simulations and train actors to develop response and contingency plans. The main aim of this phase is minimize the response time when the actual disaster strikes, and to ensure a coordinated, predictable and robust intervention. Although critical, preparedness has been traditionally suffered from a lack of funding. In fact, a mere 0.5% of the US$ 3 trillion spent on international humanitarian aid between 1991 and 2010 was used for this purpose (OCHA, 2014). A paucity of investment in preparedness and prevention is one of the major root causes of poorly coordinated humanitarian response, preventing the impacts of disasters to be mitigated from the outset;
- ***Response:*** this phase involves to the various operations that are implemented in the immediate aftermath of a disaster. Resources are deployed and emergency procedures implemented in order to preserve life, property and the environment, as well as to limit the effects of the disaster on the affected community's social, economic, and political fabric. This phase can be further broken down into two sub-phases, based on the timing and goals of their deployment:
  - *Immediate:* in the hours and days after the disaster, the response is aimed at distribution of food, medical supplies and other essential goods to affected populations, as well as providing displaced people with temporary shelter if applicable. The success of an operation in this phase is heavily reliant on the speed of goods and services deployment;
  - *Restorative:* in the later weeks and months following a disaster, the priority is the re-instatement of basic services and the delivery of goods in the shortest possible time to the highest possible number of beneficiaries. Such assistance needs to be predictable and embedded within the existing infrastructures;
- ***Recovery & reconstruction:*** this involves the operations that are put into place once the immediate threat to human life has receded. The aim of this phase is to restore the damage caused by the disaster, for example to infrastructure, economy and education. The reconstruction phase also provides an opportunity to re-build 'better', to take action to

counteract the long-term effects of a disaster and improving community resilience. As such, a long-term perspective needs to be adopted to diminish the likelihood of future disasters or the potential impact thereof;

- ***Mitigation:*** as shown in Figure 2, the humanitarian SC is not actively involved in this last phase. Nevertheless, IOs must oversee the deployment of a wide array of mechanisms designed for limiting the vulnerability of communities to disasters. It therefore involves a broad range of actions to address physical, social, economic, and environmental factors. For instance, actions to mitigate political vulnerability might involve institution-building and boosting democratic governance and inclusion in civil society, while economic vulnerability may be lessened by diversification, reducing dependence on single export sources (e.g., oil, raw materials) and boosting the social and environmental sustainability of the national existing industries (e.g., tourism).

Figure 2. The disaster management cycle



Source: Adapted from Coppola (2015)

To sum up, supply chain management serves as a vital bridge between phases of the disaster management cycle. It has a particularly important role to play between robust preparedness and a fast and effective response, and in the coordination of different operational functions (i.e., procurement, transportation and distribution in the field) as well as different branches of humanitarian organizations (i.e., headquarters and the field) (Thomas and Mizushima, 2005).

2.3 Breaking down the humanitarian Supply Chain

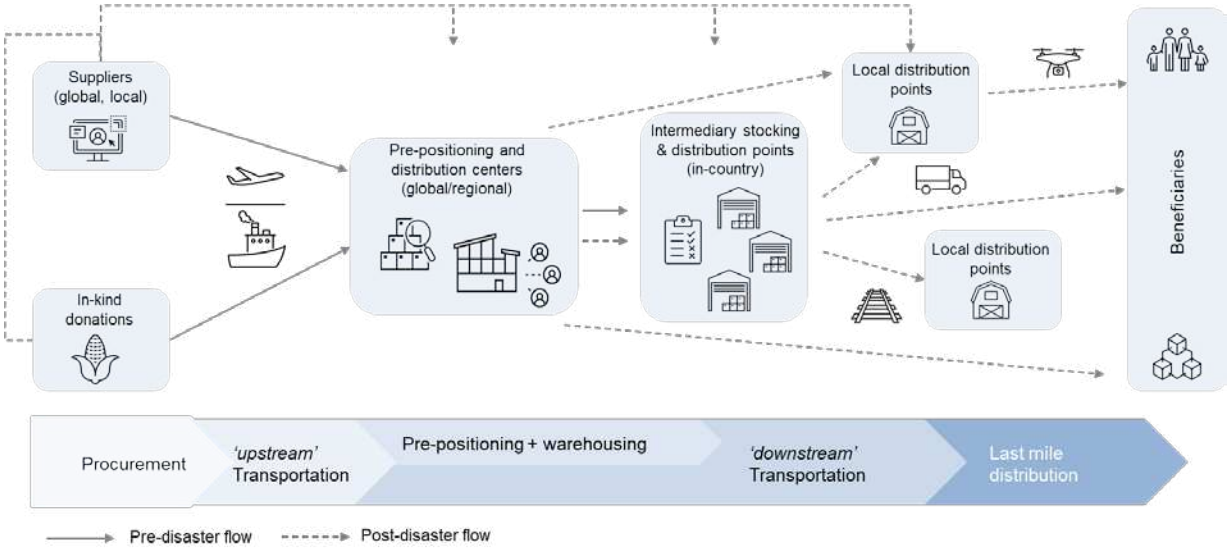
2.3.1 Humanitarian Supply Chain components

Operationally speaking, the characteristics of humanitarian SC will depend on the type of disaster in question and therefore the types of relief efforts to be deployed. That being said, the typical flow of supplies in an IO-driven relief operation is generally structured around five pillars, as illustrated in Figure 3:

- ***Procurement (supply acquisition***): IOs source supplies both locally and globally, with each option having its own benefits and challenges in terms of logistics costs, lead time and availability of supply (Balcik and Beamon, 2008). For instance, while local goods may be scarce in quantity and variety, they require shorter lead times and present lower logistics complexity and costs. Nevertheless, disasters may cause significant disruption to local production capacity and the resulting demand for goods may inflate prices and negatively affect domestic and local markets. International procurement, on the other hand, is less timely and more complex to organize (pre-qualification and framework contracting, production lead-times, shipping from vendors' deposits or pre-positioning facilities, customs clearance at port of entry), requiring huge transportation capacity for bulk shipping of large quantities of supplies. Humanitarian organizations must also adopt a sourcing strategy appropriate to the nature of the crisis, as well as the type of products required, and the capacity, goals and funding status of the organization itself. Contractual arrangements with vendors must be carefully designed (e.g., price/quantity agreement, delivery timelines for pre-determined volumes, quality testing before shipping, and planned servicing and maintenance), and a suitable supplier base pre-defined so as to take into account supply peaks and product scarcity, which may be handled through intentional redundancies. Physical standards for relief goods (e.g., common catalogues of emergency supplies and equipment, standardized relief/dignity kits and standard packaging) must be identified in order to facilitate coordination of sourcing and distribution and ensure that relief agencies operate well together (Paciarotti *et al.*, 2021);
- ***Receipt and distribution of in-kind donations***: many of goods channelled through humanitarian aid organizations are in the form of in-kind donations from developed countries, civil society organizations and individuals. However, there is a significant challenge for the effective deployment of humanitarian operations posed by un-solicited or inappropriate relief items. Indeed, these donations throw up several significant hurdles for relief agencies to overcome (e.g., handling of non-standardized packaging, time and expense required to assess usability), placing additional burdens on shipping, warehousing and staff capacities. The additional costs, logistics bottlenecks and reputational risks (Desbareau, 2013) associated with unsolicited donations make it necessary for relief agencies to develop clear

upstream processes to ensure donations are predictable and fit for purpose. Such strategies may include issuing targeted appeals and assessing the suitability of proposed supplies upfront before they are channelled into supply chains.

Figure 3 – the Humanitarian supply chain



Source: adapted from Balcik *et al.* (2010)

- ***Pre-positioning and warehousing points*:** supplies purchased in advance of disasters need to be strategically prepositioned at storage/distribution centres, which may be international, regional or local. Relief agencies may choose to stockpile other items including equipment (e.g., shelters, telecommunication devices, and spare parts for vehicles), thereby speeding delivery of items already located close to emergencies or avoiding bottlenecks at ports of entry of the destination countries. This pre-positioning of essential items can act as a 'buffer' to modulate the flow of supplies on the ground in the response phase. To create a further buffer for handling relief commodities, relief organizations may extend their inventory capacity through the planned inclusion of ports and airports of destination countries;
- ***"Upstream" and "downstream" transportation:*** transporting goods from suppliers' and donors' warehouses and other points of origination "upstream" towards prepositioning and intermediary deposition sites is usually guided by the "push" principle. In other words, it is pre-determined based on demand estimated for overarching forecasts for emergency goods in the field. In contrast, transportation from intermediary distribution points "downstream" to the beneficiaries generally relies on the "pull" principle: it is determined by the actual demand for goods, and sized based on the capacity and timeframes determined by specific means of transport and the degree of accessibility of field locations;

- ***'Last mile' distribution***: damaged infrastructure and limited availability of vehicles can make it particularly challenging to reach beneficiaries in emergency situations. Indeed, relief agencies do not typically own and operate vehicle fleets in disaster-affected regions, and instead have to rent them. This may create a surge in demand for items whose local supply has intrinsic limitations. If security concerns are high, vehicles may need to travel in convoys together with armed escorts, and lack of information on current conditions of the roadways etc. may be compromised, making the frequency and actual size of deliverables highly unpredictable on the ground.

2.3.2 Specificities of humanitarian Supply Chain

'A successful humanitarian operation is one that mitigates the urgent needs of a population with a sustainable reduction of their vulnerability in the shortest amount of time and with the least amount of resources' (Tomasini and Van Wassenhove, 2004). Hence, SC management is a fundamental component of any humanitarian operation as it enables the timely delivery of key goods, suitable services and the deployment of human resources on the ground. Humanitarian logistics can be differentiated from business logistics via several crucial features (Balcik and Beamon, 2008). The specific challenges to overcome by relief organizations may be summarized as follows:

- The conditions on the ground are often ambiguous and constantly evolving, and it may be impossible to anticipate crises and their aftermath. This makes operations difficult and generates specific operational requirements, e.g., equipment that can be set up and dismantled quickly;
- Comprehensive/reliable information on evolving needs may be lacking and the supply/demand of essential goods volatile and high stakes. There is generally an urgent demand for large amounts of a wide variety of essential goods with short lead times and timely delivery;
- Operating conditions are complicated by factors such as including political instability, lack of access to infrastructures, safety and security issues;
- The temporary nature of relief operations generates specific operational requirements. Humanitarian operations entail sudden ramping-up and winding-down phases, robust equipment that can be set up and dismantled quickly and extreme adaptability to changing circumstances are required;
- Horizontal coordination among competing independent actors responsible for interconnected aspects of disaster management needs to be smooth and rational;

- The tightly earmarked nature of emergency response donations may place limitations on resource allocation, as well as severe constraints on investment in organizational development and preparedness;
- Immediate emergency response and medium-term vulnerability reduction objectives, i.e., strengthening national markets, government, infrastructure and institutional capacity, may be difficult to reconcile.

Perhaps the greatest difference between humanitarian and business SC management is that the former must balance the diverse interests of multiple stakeholders (donors, beneficiaries, recipient governments, suppliers) while managing public opinion and upholding the principles of humanity, neutrality, independence and impartiality (Kwon and Kim, 2018). Not all organizations give these four principles the same weight, which can also lead to differences in operational choices and set-up on the ground (Dijkzeul and Moke, 2005). Regardless of these nuances, humanitarian operations as a whole have complex requirements, meaning that political sensitivity is necessary and the operating space of supply chain must be designed for great agility and adaptability. This is exemplified by the World Food Programme's (WFP) response to the 2002 food crisis in the south of Africa (Tomasini and Van Wassenhove, 2004), as summarized in Box 1.

Box 1. WFP management of the food crisis in southern Africa
In the early 2000s' several countries, including Malawi, Lesotho and Zimbabwe, were afflicted by a severe drought, which exacerbated long-term political, economic, demographic and environmental vulnerabilities in the area, including mismanaged government food reserves, economic downturn and currency devaluation, as well as high HIV infection rates and the general malnutrition and erratic weather patterns affecting rural economies. In this complex scenario, WFP quickly secured food supplies, mostly donated by the US Government, and shipped them to disaster-stricken areas. However, a miscalculation in political sensitivity by WFP's logistics came to light when it became known that most food donated had been Genetically Modified (GM). The US, like many other donors, had made no distinction between GM and non-GM food in its shipments, and the disclosure of this information prompted many of the beneficiary countries to refuse the food they had received. Indeed, their economies were dependent on non-GM products, and they were afraid of the possible contamination by raw GM whole grains and the potential impact on their bio-diversity. Hence, WFP found itself with stockpiles of food in transit towards destination countries, waiting in harbours and stored in warehouses that the organization could no longer distribute. The organization had to find a solution for the stranded shipments, finding somewhere to store the cargo and minimizing the

wastage caused by humidity. The organization moved quickly, deciding to mill the GM grain, a large-scale operation that had not been foreseen in their supply chain. Addition of the milling component had new implications for the WFP's operation, which now had to incorporate the milling process with new distribution routes, a bagging process and storage.

However, WFP was able to turn what at first seemed a negative into a positive. By milling the GM maize, the organization could add much-needed vitamins and minerals to boost the immune systems of those recipients weakened by HIV. Furthermore, local mills that had stood empty for many years were reopened, creating employment and encouraging regional purchases, which, in turn, stimulated the economies of several African countries.

2.4 Gaps, Critical Success Factors and maturity of humanitarian Supply Chain

2.4.1 Traditional humanitarian SC gaps

The most expensive part of disaster relief is logistics, which is estimated to account for roughly 80% of its entire cost (Van Wassenhove, 2006). Effective SC management is therefore key to efficient humanitarian operations. This notwithstanding, humanitarian logistics has until recently been relatively under-skilled, under-funded and under-resourced. Traditionally, root causes of humanitarian SC management failings include (for a review, see Kovacs and Spens, 2009):

- *Nature of the funding process*: humanitarian organizations tend to focus on direct relief expenditures rather than investing in systems and processes to improve the efficiency of relief operations in the long term due to donors' concerns to maximize aid flows to beneficiaries, combined with tight earmarking of donations. This leads to underinvestment in know-how and infrastructure (e.g., IT and warehousing facilities);
- *Sluggish, un-even professionalization:* humanitarian organizations are defined by their personnel, who share a common value system relating to the alleviation of suffering of disaster victims. However, they often lack specific training in logistics, and professionalization of SC management is only recently becoming an area of investment;
- *Organizational culture and high employee turnover:* a "crisis-management" organizational culture, and the need to constantly "put out fires", engenders employee burnout and high staff turnover, which in turn limits institutional learning. Moreover, there has been limited consideration of strategic SC matters and little recognition of the importance of logistics until recently, with emergency assessment teams often lacking logistic experts;
- *Competition for funding:* the major humanitarian organizations are in competition for funding. This may limit their willingness to cooperate, coordinate and pre-emptively set up a division of labour to be activated in emergency response situations.

2.4.2 Critical Success Factors of the humanitarian Supply Chain

Critical Success Factors (CSF) can be defined as 'the limited number of features, characteristics or variables that, when properly sustained and managed, ensure the competitive performance of the organization within a particular industry' (Alazmi and Zairi, 2003). As regards humanitarian SC management, the international literature has identified eight CSFs (Pettit and Beresford, 2009):

1) **Strategic planning:** successful organizations are well positioned in their competitive environment thanks to their distinctive capabilities, assets and business processes. In terms of relief agencies this requires clear and appropriate decision-making on: the nature and size of field operations to be carried out; the size and timing of financial resource deployment; the set-up of key infrastructures and assets; the deployment of technical skills; an appropriate level of in- and out-sourcing of key business processes; and the nature and scope of strategic partnerships with suppliers. A well-defined strategic plan provides an organization with clarity as regards its positioning in a theoretical "division of labour" among relief organizations, a robust forecast of its ability to mobilize resources for emergency response, and a clear view of the capability of its own SC system to deliver essential goods and its inter-dependency with third parties. Below the corporate level, strategic planning concretizes in the timely, accurate and iterative assessment of the relief needed to be deployed in each operation. This, in turn, informs the type of response, procurement actions, on-the-ground activities and collaborative networks to be activated at the various stages of the disaster management cycle;

2) ***Supply chain strategy****:* organizations must adopt a fit-for-purpose SC strategy based on their chosen strategic position within the competitive humanitarian environment. For instance, "powerhouse" organizations like the WFP and UNHCR should adopt "first mover" strategies, proactively shaping upstream and downstream logistics; this may involve setting up shared physical infrastructures (e.g., UN Humanitarian Response Deposits by the WFP), as well as international shipments and fleets of vehicles in the field, and provide an information technology back-bone (such as blockchain) for cash based assistance. Actors with "niche" positions, focused on specific themes, on the other hand, would be best to specialize in one specific area (e.g., UNFPA set itself up as a global procurement agency for contraceptives and essential supplies for reproductive healthcare); by adopting a "maximum streamlining" strategy they should be able to fully utilize domestic and UN system-wide infrastructures and deliver their programmes on the ground with minimum ad-hoc investment in physical assets and the greatest operational efficiency and flexibility;

3) ***Procurement and inventory management:*** the "pull" approach, i.e. goods are moved, or replaced, in the various nodes of the supply chain to meet an express demand, dominate

commercial logistics. In contrast, in disaster relief circumstances, inventory first requires a planned "push", based on demand forecasts; this enables essential goods to be pre-positioned in strategic central, regional local storage locations and activating a "pull" approach to get goods to the precise area of need in the field (Whybark, 2007). This "two-step" dynamic arises due to the specific volumes and types of goods, and to the inertia inherent in supplying emergency items. Inventory management also differs from commercial operations in that the time-value of commodities in humanitarian operations is much greater than the inventory carrying costs (Long and Wood, 1995). This is especially true in the immediate response phase, in which delivery lead-times are directly correlated with lives saved. Effective planning, coordination and control of material flows also hinge on procurement; to ensure flexibility of both process and products and nimble responses to demand, framework agreements with pre-accredited vendors, set-up of redundancies in the suppliers' base to handle peaks and flexible contracting arrangements (e.g., "call" options) are all essential factors in this regard;

4) ***Transport and capacity planning****:* to minimize response times and costs in the "upstream" phase of the supply chain, the global warehousing and supply network set up by relief agencies needs to be supported by effective transportation capabilities. To this end, a structured international shipping strategy from suppliers' warehouses to intermediate nodes of the supply chain, e.g., global and regional deposits, ports of entry of destination countries or central national deposits must be established. When a disaster arises, 'down-stream' transportation within countries may encounter infrastructures destabilization and obstacles to access to beneficiaries. Hence, a critical factor to ensuring success is an organizations' transport organization capacity and ability to maximize the utilization of the severely limited asset capacity; drawing from all available resources and transportation modes distribution fleets must be deployed on the ground at short notice, delivery schedules optimized, and maintenance/servicing of equipment effectively provided to guarantee its continuous usability (Gunasekaran and Ngai, 2003). One means of ensuring a predictable flow of goods and limiting the competition between relief agencies for the same local resources is to set up 'fleet sharing' cooperation strategies, i.e., structured transportation networks, among relief organizations;

5) ***Information management and technology:*** the success or failure of relief operations hinges on timely and effective access to information (Long, 1997). Hence, IT systems designed to structure and deliver integrated information and performance measures are key to effective supply chain operations. SC information systems should be capable of taking into account both "upstream" information (i.e., volume and timing of goods flows from suppliers to strategically selected pre-positioned and intermediate stocking points) and "downstream"

information (i.e., capacity of the local distribution channels and the evolving supply needs on the ground). As the complexity of crises has increased and IT systems are more sophisticated, modelling algorithms for planning and managing the integration between "push" and "pull" system are now embedded into Decision Support Systems (DSS) as standard (Rekik *et al.*, 2013). In this regard, the key to achieving maximum integration is for national and international actors to deploy inter-operable IT systems and exchange data in a standardized format;

6) ***HR management:*** critical to ensuring the success of relief operations is the professionalization of logistic and SC management capabilities within organizations, although this is a relatively recent trend (Kovac and Spens, 2009). Another critical aspect is the timeliness of deployment of staff. Humanitarian organizations often employ standby mechanisms such as 'surge' rosters, or transfer people from other operations to meet staffing needs on a short-term basis in order to deploy the necessary staff members for an operation when a crisis arises. To enable immediate deployment, some organizations, the UNHCR for example, maintain a contingency staff roster whose members are constantly in stand-by, and make use of the so called 'emergency stand-by partnership' agreements with governments, NGOs and the private sector. This ensures access to personnel whose expertise and capacity complements the UNHCR's own surge capacity, thereby improving the efficiency and predictability of the emergency response;
7) ***Continuous improvement:*** it is particularly challenging for humanitarian organizations to have a holistic approach oriented towards continuous organizational development due to their inherent "reactive" approach to disasters and the abovementioned "fire-fighting" mindset. However, setting up robust mechanisms to measure SC performance, e.g., in terms of reliability, flexibility, lead-times, cost per output unit, cost-effectiveness and added value, is a major requirement for success. In order to effectively monitor and capitalize on these measures, there also needs to be a solid knowledge management process; the ultimate aim is to orient behaviours towards "what works", share lessons learned and socialize critical incidents;
8) ***Coordination and collaboration:*** it is fundamental to ensure strategic 'vertical' collaboration with suppliers for timely and economic provision and deployment of essential relief supplies. An effective SC must also be based on 'horizontal' coordination and networking among humanitarian actors, given that they are highly inter-dependent. To this end, shared warehousing, shipping arrangements and fleet management can help maximize the absorption of logistics fixed costs, and coordinated procurement provides significant opportunities to achieve economies of scale.

2.4.3 Using CSFs to assess the maturity of humanitarian Supply Chains

Maturity assessments help decision-makers to evaluate their organization in comparison with certain standards and define areas for improvement and pathways against clear targets. In organizational development, maturity refers to 'an evolutionary progress in the demonstration of a specific ability or in the accomplishment of a target from an initial to a desired or normally occurring end stage' (Mettler, 2011). The origins of maturity models lie in quality and IT management, and extended to several disciplines and management systems, including Results Based Management and Enterprise Risk Management.

In the recent literature on humanitarian SCs (Cozzolino, 2012; Grest *et al.*, 2020), the CSFs described in the previous section have been leveraged to create a maturity assessment framework aligned with the models adopted by industry but tailored to humanitarian SC management (for a review see Harabuda, 2017). This resulted in the maturity model shown in Table 1, which has been adapted for linearity and ease of understanding. Maturity is expressed in three main areas, each broken down into several sub-divisions:

- *Strategy*: the robustness of the strategic planning, the extent of the organization's SC footprint along the phases of the disaster management cycle and the comprehensiveness of SC performance measures;
- *Management:* the approach to sourcing (from lowest price to collaborative warehousing), the scale and scope of inventory management infrastructure, transportation modalities (a spectrum from static/pre-determined to dynamic/adaptive), the availability of skilled human resources and their level of managerial involvement and deployment readiness, as well as the type, quality and extent of data available for SC management, and the level of integration and inter-operability of IT management;
- *Network:* an organization's interconnectedness with global humanitarian actors and commercial partners, and the pervasiveness of vertical and horizontal coordination; this maturity index is therefore linked to optimization of inter-organizational performance, elimination of redundancy, and maximization of efficiency along the entire relief supply chain.

In summary, the model involves four stages of maturity, each of which encapsulates a progressively higher level of strategic ambition, a more comprehensive operational approach to SC and a more interconnected operating model. The ***elementary*** stage is characterized by a reactive supply chain management lacking overarching strategic SC vision. In this stage operations are focused on immediate responses and SC is seen as an unavoidable necessity rather than a priority or a 'core' function. SC activities are siloed, fragmented and poorly integrated, technical expertise is lacking, information capacity is low, and coordination between

relief partners and suppliers is low.

Once the organization starts to put in place an SC strategy based on situational analysis and mapping of supply and distribution risks, it reaches the ***intermediate*** stage. At this stage, the preparedness phase is encompassed as a means to improve operational responsiveness to disasters; clear performance objectives and ongoing monitoring help guide and structure data-driven sourcing, warehousing and transportation activities. This enables the organization to begin to dynamically adapt its operations to changing needs and demands in the field. While SC operational activities are internally integrated, but interactions with third parties are still mostly transactional.

With a conceptual shift towards a 'preparedness-first' approach, organizations reach the ***advanced*** stage; their strategic planning process is optimized and they boast an end-to-end supply chain. Building on the previous stage, at a managerial level, they exhibit great flexibility and ability to adapt to external factors, driven by highly inter-operable information systems, a skilled workforce ready for rapid deployment, a fully structured central and local warehousing system, extensive transportation capacity, and comprehensive performance metrics. Their supply chain network is also extensive and grounded in long-term cooperation goals with humanitarian partners and suppliers.

At the final, ***proficient*** stage, the SC is fully optimized and the organization has adopted 'first mover' strategies, introducing and socializing technological innovations and providing a system-wide infrastructure for sharing costs and optimizing materials and information flows. Operatively speaking, the organization structure is as an open supply network, and it is able to seamlessly adapt its hub-and-spoke warehousing and transportation systems to evolving needs and across multiple stages of the emergency response. Thanks to a fully networked IT system and high predictive analytics capacity, its operations are dynamic and facilitated by strategic sourcing, and its human resources can be deployed rapidly. It has fully optimized vertical and horizontal coordination, and product, network, and process lead times are short. Managers can leverage this framework to take stock of the current situation and set the appropriate "level of ambition" for SC maturity to aspire to, allowing them to develop realistic, time-bound and appropriately resourced initiatives to achieve targeted improvements which can be monitored over time.

Table 1 - Maturity stages of humanitarian supply chain management

Key area	Sub-area	Maturity levels			
		Elementary	**Intermediate**	**Advanced**	**Proficient**
Strategy	**Strategic planning**	Chaotic, experience based	Emerging, based on ad-hoc analysis and mapping of operational risks	Integrated end-to-end planning	'First mover' positioning, dynamically adapted to system-wide challenges
	Supply chain focus (by disaster management cycle phases)	Response → Recovery	Response → Recovery → Preparedness	Preparedness → Response → Recovery	Mitigation → Preparedness → Response → Recovery
	Performance measurement coverage	Effectiveness	Effectiveness, efficiency	Effectiveness, efficiency, flexibility	Effectiveness, efficiency, flexibility, sustainability
Operational Management	**Sourcing**	Lowest price	Cost and quality	Cost, quality and timeliness/ deployment readiness	Strategic sourcing obtaining max. VfM based on forecasting of needs and agile distribution
	Inventory management	No warehousing – just in time delivery, use of available infrastructure on need-be basis	Ad-hoc arrangements, e.g. local & temporary warehousing solutions	Centralized + field warehouses in focus countries	Hub and spoke network of warehouses including commercial and relief partners
	Upstream and downstream transport	Pre-determined transportation routes and lead-times	Centralized transportation approach + field adaptation	Extended capacity through close partners (vendors and other relief agencies)	Transport consolidation and dynamic routing
	Human resource management	Lack of resources and experts	Individuals trained in basic skills; variable capacity to deploy staff in emergencies	Reliable base of trained resources for fast deployment in operations	Cutting edge technical skills, inclusive management style and high state of readiness
	Data and information management	Data silos; collected; ad-hoc data collection tools and methods, mostly after the fact	Satisfactory data coverage; limited inter-operability & intelligence/forecasting built-in IT systems	Highly integrated and inter-operable set of data and tools for ongoing monitoring and dynamic forecasting	Real-time, standardized data & tools networked with humanitarian partners and effective predictive analytics
Network	**Structure**	Isolated operations; fragmentation of internal supply chain activities	Internally integrated operations	Internal integration and extensive supply chain with trading partners and relief organizations	Open supply network Horizontal and vertical connection of all the SC nodes
	Coordination & coordination approach	Hierarchical and transactional	Internal coordination; limited strategic cooperation	Structured collaboration based on long-term objectives	Holistic collaboration based on alignment of goals and systemic network logic

Source: adapted from Grest *et al.* 2020.

2.5 The 'Performing' Humanitarian Supply Chain

2.5.1 Agility, leanness and quality: trade-offs and complementarity

Relief organizations set up their SCs in a highly constrained environment with constant tension between operational capabilities, resources and time. This inevitably results in trade-offs among the three critical performance dimensions in the "supply chain triangle" (Cozzolino *et al.* 2012; DeSmet, 2007), which is shown in Figure 4 and described here below:

- *Agility*: this is the ability of an organization to quickly adapt and respond effectively to unexpected changes on the ground, unpredictable demand and short lead times (Maskell, 2001). Speed of delivery and effectiveness are crucial in the immediate response to a disaster, when the highest number of beneficiaries need to be reached in the shortest amount of time with the most appropriate goods and services for their needs;
- *Leanness:* this is essentially an indicator of cost-efficiency, i.e., the ability to do more and better with less. A lean organization can reach the highest percentage of target beneficiaries within the constraints of the available financial and material resources. This entails a continuous search for the most economical supply sources (e.g., purchasing locally rather than shipping internationally), and standardized transportation, inventory management and distribution of goods, thereby benefitting from economies of scale and replicability. When demand on the ground is relatively stable and predictable, and in the reconstruction phase, leanness is crucial, enabling relief organizations to deliver goods and services rapidly and cost-efficiently;
- *Reliability and quality*: the quality and safety of goods and services needs to be assured throughout the supply chain and across operations. However, the provision of fit-for-purpose goods and the quality of delivery services may be undermined by an excessive drive for speed and cost-efficiency. While pursuing agility or leanness across the humanitarian cycle, therefore, to avoid compromising quality and reliability, humanitarian organizations must identify standards and minimum thresholds.

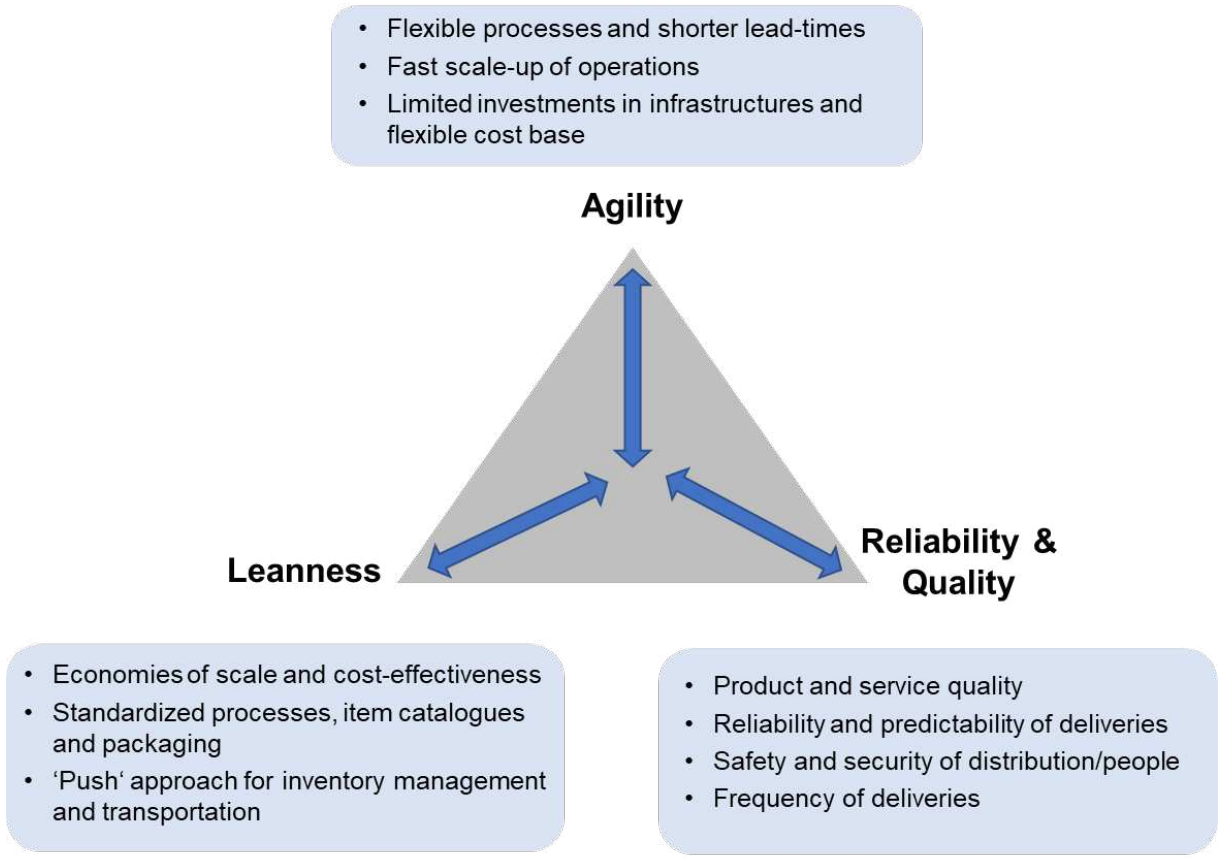
Transitioning between stages of the disaster management cycle entails a shift in focus from *speed* to *cost reduction* in terms of operational performance (Tomasini and Van Wassanhove, 2009; Cozzolino *et al.*, 2012), and therefore a parallel shift from a focus on agility to that of leanness. However, these two approaches are not necessarily "sequential", but may instead be seen as co-existing, complementary features of the same SC. In particular (Oloruntoba and Gray, 2006):

- The *lean* approach mainly applies to the "upstream" SC component; applying a "push" rationale, humanitarian organizations need to streamline the activities related to: predicting demand for emergency supplies; strategic sourcing and procurement; prepositioning of

appropriate volumes of goods at the right locations; engaging the right people with the best skillsets to respond to emergencies; and setting up transportation routes to delivery points, maximising their efficiency;

- The *agile* approach, on the other hand, is mainly applicable to the "downstream" SC component; through application of a "pull" rationale, and by leveraging a robust system of real-time data on beneficiaries' evolving needs, organizations should be able to promptly deploy the most appropriate supplies and transportation modes for the challenges and avenues for intervention on the ground.

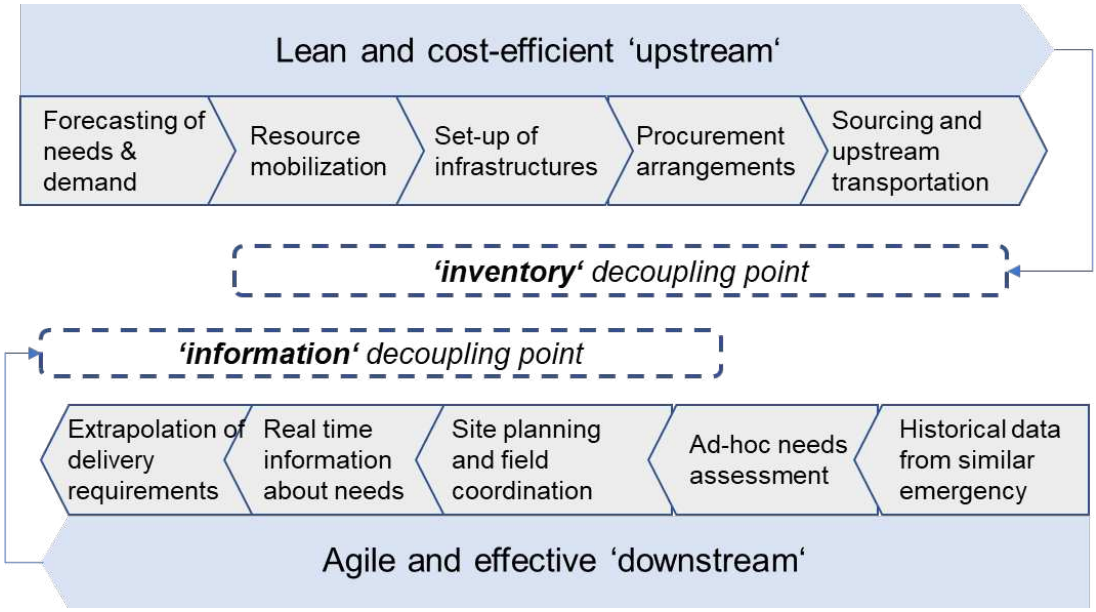
Figure 4. The humanitarian supply chain 'triangle'



Source: adapted from DeSmet (2007)

With this in mind, a key success factor for relief agencies is to postpone the moment of *de-coupling* between the lean and agile approaches as much as possible (Yang *et al.*, 2004). As shown in Figure 5, this "postponement" occurs "upstream", when inventories are physically packaged and delivered to the field, and "downstream" based on leveraging detailed information on demand and the location of beneficiaries, as well conditions on the ground.

Figure 5 – Complementarity between Agile and Lean approaches



Source: adapted from Oloruntoba and Gray (2006)

2.5.2 Supply Chain Strategies

Several strategies may be implemented to improve the logistic preparedness of humanitarian organizations (Jahre *et al.*, 2016), optimizing the main components of their SC, from sourcing and procurement to transportation, stocking and distribution. Fundamental factors include:

- *Supply base flexibility:* this allows relief organizations to maintain multiple sourcing options and therefore alternatives in the event that one source is disrupted or curtailed. This strategy can be deployed through development of alliance networks with suppliers in various countries, known as "hedging" and/or the so-called "vendor managed inventory" (Lechtenberg and others, 2017). In the latter, the supplier takes on the responsibility of replenishing specific stocking points of the organization at a certain frequency and volume. This strategy is enabled by robust forecasting and predictable turnover of relief goods distributed from stocking points to field operations, and may be particularly useful to improve vertical integration of agencies' pre-positioning points with upstream suppliers. Finally, existing networks of local retailers may be effectively leveraged to organize and deliver last-mile supplies, an especially useful strategy in the event of localized natural disasters requiring the activation of local networks (see the notion of "*buttressed supply chain*" by Sodhi and Tang, 2013).
- *Supply contract flexibility*: relief agencies normally operate through Long Term Agreements (LTAs) and Framework Contracts (FCs), which stipulate conditions on price and overall

volume of goods that can be purchased by the relief organization over a certain timeframe. This strategy provides the flexibility needed for humanitarian operations. Coupled with the flexible supply base, it ensures that relief organizations are able to access several qualified supplies through pre-determined conditions to respond to sudden-onset disasters in a rapid and cost-effective manner. The upfront definition of a minimum guaranteed production volume to respond to identified demands for key emergency commodities is one of the most vital aspects of LTAs and FCs. Given the normally saturated capacity of pharmaceutical companies, this is especially sensitive in the case of sanitary and medicinal products. Humanitarian organizations have also experimented with "pre-purchasing with option" contracts with a view to improving the trade-off between purchasing flexibility and the cost of goods (Wang *et al.*, 2015). In order to obtain the right to purchase relief supplies at a certain price once a disaster strikes, the supplier is paid a premium before a disaster strikes. This enables the purchaser to lock-in a specific quantity of supply but delay the purchase decision until there is an actual demand.

- *Strategic outsourcing*: this strategy is geared towards engaging centralized service providers in order to achieve specialization and economies of scale. Increases in volumes are directly proportional with efficiency and better market conditions, and both procurement and logistics are fixed-cost functions. Specialist "procurement agencies", like UNICEF and UNFPA for health products and WFP for international shipping and field logistics, may be called upon to serve recipient governments, INGOs, and bilateral and other multilateral organizations. There are clear cost recovery, capacity optimization and reputational advantages for provider agencies associated with internalizing services and functions for which they become leaders. Client organizations, on the other hand, are able to deliver their goods more professionally and efficiently than if they set up their own infrastructure.
- *Centralization and strategic stocks*: centralized hubs for pre-disaster storage, packaging and international distribution have been set up by several multilateral organizations. UNICEF, for example, maintains a global hub in Copenhagen from where it can manage global logistics, store medical goods and package dignity kits and other emergency supplies. Pre-positioning of supplies, equipment and other fixed assets in global or regional centers is a common strategy used so that immediate emergency response needs can be met through pre-purchased goods that are close to the site of the emergency. Depleted stocks can be back-filled through "fresh" orders to international suppliers to be deployed at later stage (see Richardson *et al.*, 2010, for a review and conceptualization). The maintenance of such centres entails significant fixed costs, including inventory management information systems, capital and operational warehousing infrastructure costs (staffing, maintenance) and transportation from vendors' global warehouses to relief agencies' deposits. An "outsourced"

version of this strategy is the pre-planned stock arrangements with suppliers and transport companies adopted by organizations like World Vision (WV) and the International Federation of Red Cross (IFRC). This enables direct deployment of supplies in a range of countries without the lead-times necessary for fresh production.

2.6 Selected Humanitarian Supply Chain Partnerships

To highlight the dynamism and entrepreneurship in supply chain management among IOs, this section explores selected cases of partnerships in this functional area.

2.6.1. Humanitarian Response Deposits

The United Nations Humanitarian Response Depot (UNHRD) is an emergency preparedness and response tool originally established by the World Food Programme (WFP) in 2000 at the military airport in Brindisi (Italy). It was to act as a joint logistics platform for coordination, procurement, transportation and pre-positioning of emergency relief supplies (e.g., medical kits, ready-to-use foods, IT equipment and shelter items). Based on its early success, in 2006 WFP set up five additional Humanitarian Response Depot (HRD) facilities in locations chosen for their proximity to international transport infrastructures and nodes, and in regional proximity to disaster-prone areas, namely Dubai (UAE), Las Palmas (Spain), Accra (Ghana), Kuala Lumpur (Malaysia); and Panama City (Panama). HRDs provide great accessibility to many different modes of transport and enable rapid deployment (within 24 to 48 hours) of essential supplies to sites of emergency.

The UNHRD network provides free storage, procurement, transport, handling, and technical field expertise for partners, serving a “one-stop shop”. Its core services include physical receipt and storage of stock and handling of customs clearance, as well as regular storekeeping services and annual stock inventories. It also provides additional SC services on a “full” cost recovery basis (direct costs plus 7% contribution to overheads), including:

- Installation of technical equipment items and capacity building on their utilization to national counterparts;
- Insurance of deposited stock during storage up to the handover point, and physical transportation of commodities to the final delivery point;
- Procurement of emergency relief items, support equipment, assets and transport services;
- Purchase of “white” stock owned by suppliers and stored at UNHRD premises pursuant to a Long-Term Agreement (LTA) with the WFP;
- Lending and borrowing available stock from/to other partner organizations.

User also have the opportunity to loan, sell or exchange stocks with other users. UNHRD Customer Service acts as an intermediary between requestors and owners such “authorized users’ stocks”. These bilateral agreements are mainly governed by two types of contract:

- *Replenishment*: wherein the requestor refills borrowed stocks based on their value plus 5% as a safety margin. The lender may request items with the same technical specifications or other items of equal value;
- *Repayment*: wherein the requestor transfers the value of items indicated in the online stock report to the lender’s UNHRD account.

Additional services, such as technical assistance on logistics issues and research and development (R&D) services are also offered UNHRD network partners. The latter allows them to optimize the design, test and upgrade relief items, enabling, for example, the customization of dignity kits, whose packaging and components need to meet the specific requirements of affected populations.

As of 2021 the UNHRD network, with its 94 partners (12 UN, 20 governmental and 62 non-governmental organizations) has set itself up as an effective tool allowing an immediate and, above all, coordinated response in the event of large-scale emergencies. A particularly impressive growth was recorded between 2015 and 2021, during which consignments rose by 68%, and +66% of value dispatched at UNHRD network level (in million $), reaching +37% countries (https://www.wfp.org/unhrd). Overall, the UNHRD network represents a successful example of voluntary coordination between humanitarian actors. However, in recent years it has been forced to face significant funding issues, with a forecasted shortfall of US$ 2.0 million in 2018 alone (a forecasted income of US$ 7.7 but operating costs amounting to approximately US$ 9.7 million per year) (WFP, 2018). This deficit is mainly being driven by the increase and volatility of the international shipping market and freight-forwarding costs. Hence, although the UNHRD’s cost-sharing strategy continues to appear sound, it is imperative for WFP to continue to enhance the contractual and infrastructural agility of this joint venture.

2.6.2 The UN Humanitarian Booking Hub

Nowadays, the UN Humanitarian Booking Hub is the largest global, inter-agency virtual marketplace of UN field services and emergency support. Initially developed in 2015 and currently run by WFP, it is a corporate IT tool for managing its field-based physical assets (e.g., guesthouses, vehicle fleets) designed to be highly user-friendly and mobile accessible; thanks to the principle of “mutual recognition” of financial rules and service charges among provider and user organizations its transactions are so easy to conclude that it has earned the epithet of “Uber for Humanitarian services”. This software solution for UN collaboration has rapidly expanded its services over a short period of time; as of October 2022, the Booking Hub had

1,340 UN field service points in 106 Countries (significant increase of 30% since 2020). It had over 1,150 service managers and a predicted total of 600,000 clients per year from the 20 UN humanitarian agency partners (https://unbooking.org/). Among the portfolio of services the UN Booking Hub offers to the humanitarian community includes:

- *Accommodation*: with 270 UN guesthouses across 32 countries featuring security and quality standards aligned across countries and agencies. It provides access to about 250 pre-approved safe hotels in selected high-risk areas, and also provides links and instructions for security clearance and travel management;
- *UN Common Mobility and Carpooling services*: the Hub provides information about UNHAS flight schedules and prices, as well as airport pick up services, armoured vehicles and cars on short-term leases, leveraging a shared network of 4,600 UN vehicles and 3,700 drivers;
- *Medical Booking Services:* it offers medical and counselling services across more than 75 UN Clinics and 35 counsellors providing wellness support in the field.

At the outset of COVID-19, the UN Booking Hub also began to provide global information and online emergency flight booking (Global Pax Air Service) for the humanitarian community.

Another important role played by the Hub is to digitize and harmonize previously manual and agency-driven end-to-end support processes. Within the remit of its Business Operations Strategies (BOSs), it effectively increases the scale and scope of UN-to-UN collaboration on country-level operations. The Hub is clearly a “living entity”, and has ambitions to continuously expand its services and partners to capitalize on economies of scale, by sharing fixed costs for physical assets and personnel in the field and leveraging the common bargaining power of the UN system, and maximize operational efficiency.

2.6.3 The COVID-19 Supply Chain System for Emergency Response

In the early stages of the global COVID-19 outbreak, several UN system organizations and Transnational Hybrid Organizations (THOs) involved in humanitarian assistance and global healthcare created an ad-hoc COVID-19 supply chain system (CSCS) to improve the response by providing access to life-saving health products affected by limited production volumes and the global shortage. The main operations of the CSCS were to: *a)* quantify, source and prioritize allocation of selected commodities, including biomedical and diagnostic products and personal protective equipment (PPE); and *b)* deliver these products on the ground. It achieved the latter by leveraging the physical assets of the UN Humanitarian Air Services, and by the end of 2020 the CSCS had delivered US$1,091 million worth of COVID-19 health products, including 1,023 million units of PPE, 71 million diagnostics kits and 58,246 oxygen concentrators. The immediate responsiveness of CSCS’s efforts led the system to handle more than 60% of the over 4,500

shipments, of which 60% were by air (The Yellow House, 2021; WFP, 2020). Roughly, 63% of the supply volumes were cumulatively allocated to the 80 low- and lower-middle income countries among the 184 countries served. With a view to effective operations, the CSCS was set-up as a multi-layered partnership comprising four major components, namely the Control Tower, the Global and Regional humanitarian response hubs, the Purchasing Consortia and the Supply Chain Task Force (SCTF). The SCTF, being charged with setting up and implementing a global strategy to ensure access to supplies the WHO identifies as critical is effectively the CSCS's steering body. In order to provide strategic guidance, it gathers insights and assessments from its partners, identifies priorities for sourcing and supply allocation, and oversees procurement operations, as well as seeking to capitalize on synergies by leveraging established field-level physical infrastructures and SC systems. The Task Force includes among its members participating UN organizations (UNDP, UNFPA, UNHCR, UNICEF, UNOPS), the Red Cross movement, the World Bank, the Global Fund, international NGO partners of the humanitarian health cluster and donors, and it is chaired by the WHO and WFP.

The three *Purchasing Consortia* set up steered global-level sourcing operations for the main categories of COVID supplies covered by CSCS. On the demand side, to establish a needs-based and achievable volume of healthcare products to be sourced, the consortia adopted an approach combining bottom-up and top-down practices. On the supply side, the partnership pursued targeted market shaping by identifying quality sources for specific healthcare products; these were then procured through a multi-lane approach, using partner agencies' (e.g. UNICEF) own procurement branches and activating external procurement service agents (e.g. Global Fund's approach) or intermediaries. WHO and UNICEF were responsible for channelling 71% of the total value, but thirteen different agencies overall were involved in procurement. This market-shaping approach leveraged the combined bargaining power of CSCS's partners to engage industry, enabling negotiation of competitive price and volume agreements for scarce products; it also enabled them to secure competitive conditions in a "suppliers' market" of newly developed products such as polymerase chain reaction (PCR) diagnostic kits, accessing some of the lowest prices on the global market.

The *Control Tower* was set-up to be the operational backbone of the CSCS. It focussed on assessing and monitoring demand, establishing allocations of supplies to countries and overseeing the field-level logistics and delivery processes, as well as supporting the SCTF. It provided on-line access to extensive information and communication exchange with partners and beneficiary countries, in particular through the Essential Supplies Catalogue and the Supply Portal, designed as an end-to-end, planning-to-demand fulfilment information system.

The system set up to deliver supplies in the field consisted of three *Global Humanitarian Response hubs* (Liège, Belgium; Dubai, United Arab Emirates; and Guangzhou, China) situated

near the manufacturers of key health products, and five regional hubs (Accra, Ghana; Addis Ababa, Ethiopia; Johannesburg, South Africa Kuala Lumpur, Malaysia; Panama City, Panama) for consolidation and international dispatch through cargo airlifts, passenger air services and tailored supply chains for each product category. UN Humanitarian Response Depots (UNHRD), UNICEF's global supply hub in Copenhagen and regional hubs in Brindisi, Dubai, and Panama were leaned on in order for there to be a coordinated and agile response. WFP took the lead on shipping, granting smaller NGOs access to otherwise unattainable cargo space.

This collaborative effort proved to be crucial in ensuring a more rapid, better quality and predictable access to essential supplies for vulnerable populations, especially in developing countries. The CSCS thereby provided an exemplary and prompt joint response under extraordinary circumstances. Several strengths set the initiative apart, including: early and creative initiative taken by WHO and UNICEF as well as donors and partners under a clear division of labour; nimbleness in deploying immediate response while developing a robust governance, planning and monitoring project infrastructure; effective blending of the collective capabilities of public and private sectors, ensuring global flows of essential healthcare products. That being said, there are some lessons to be learned, as a 2021 assessment of the CSCS brought to light a series of limitations (The Yellow House, 2021), including:

- The SCTF's approach to determining strategies and priorities was rather top-down;
- Allocation of commodity volumes was somewhat funds- rather than needs-driven;
- The allocation criteria used by consortia lacked harmonization, and there were delays in incorporating epidemiology data and other risk factors that came to light;
- IT systems for planning, transaction management and monitoring were sub-optimal, resulting in duplication of efforts and confusion as to the status of orders;
- The notion of "essential" supplies was initially unclear, leading to a sub-par approach to procurement;
- Certain key partners were left out, and the World Bank, for example, ended up developing its own separate COVID-19 response platform.

Future emergency SC joint ventures should bear in mind these limitations, striving to:

- *Balance effective coordination and inclusiveness*: the great number of stakeholders involved led CSCS to become a mechanism for sharing information rather than a steering body. Establishing a separate forum for discuss critical issues to be debated in a small, executive-level setting might be a better way of making strategic decisions;
- *Design joint venture mechanisms in advance*: CSCS was launched with the pandemic in full swing, at the most critical juncture for health products, and shipping became problematic. Advance planning in non-turbulent times and drafting a "playbook" detailing standard

operating procedures, system and data requirements and roles, could improve the robustness and agility of the emergency response;

- *Invest early in joint data collection and information systems:* it took CSCS several months to develop a data consolidation platform, which hampered decision-making and prevented the Control Tower from providing the SCTF with fully effective analytical support. Improvements in needs assessment, informed decision-making, and delivery status visibility could be gained through up-front investment in a joint IT system backbone.

2.7 Strategic and operational impacts of the transition to Cash and Voucher

Over time, the preserve of humanitarian assistance organizations has evolved from the mere provision of essential services and supplies in the immediate aftermath of a disaster to a more holistic approach designed to combat long-term vulnerability and risk in prolonged crises. As such, they have made a major shift from "aid" to "integrated assistance", focussing on restoration, rehabilitation and resilience-building as well as emergency response. (Rougier *et al.* 2018). Thus, humanitarian organizations have embarked on a journey towards progressive diversification and broadening of their intervention; by taking the long view, they can place beneficiaries at the heart of humanitarian efforts and expand the way in which the physiological and psychological needs of affected peoples' can be met (Harvey *et al.* 2010).

Historically, aid has predominantly been delivered through *in-kind assistance* (Tappis and Doocy 2018; Alderman *et al.* 2018), i.e., the delivery of essential commodities such as food, medicines, clothing and hygiene products. Over the last two decades, however, especially in after 2010, humanitarian organizations have been moving towards *Cash and Voucher Assistance* (CVA), which entails the provision of:

- *Cash*: money, in various forms, to be used to fund essential items as the beneficiaries see fit judgment. Cash can be transferred through bank accounts, ATM/debit cards or local money transfer companies for remittance, which reduces distribution costs, but is only actionable in contexts with widely accessible, reliable banking infrastructure (Piotrowicz, 2018). The fastest-growing option is mobile money transfer, as these allow instantaneous transactions in large batches (Sodhi and Tang, 2014). Other solutions involve blockchain technology, with further automation of processes and easing the burden of tracking and tracing (Wang *et al.*, 2019). The last resort option is direct cash delivery, which might confer the ability to select physical distribution points (Mattinen and Ogden, 2006), but also raises transportation and security issues (Tappis and Doocy, 2018);
- *Vouchers*: entitlements to be exchanged in designated shops or fairs can be transferred to beneficiaries in the paper or electronic form, allowing beneficiaries to receive pre-determined

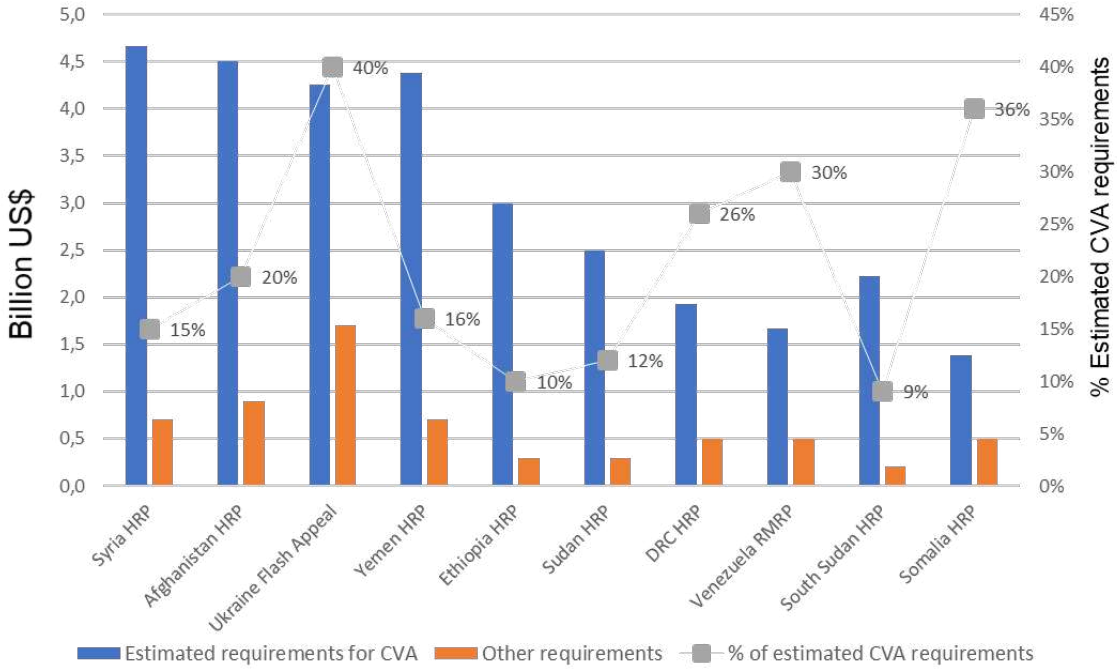
commodities in exchange for vouchers (Maunder *et al*., 2015).

Cash transfers may be unrestricted, although beneficiaries may have to meet certain conditions or obligations to receive assistance. Unrestricted cash has the potential to more flexibly respond to people's needs, empowering them to choose the specific mix of goods and services they require and providing them with better coping mechanisms and greater dignity and (Austin and Frize, 2011). However, the recipient country needs to have a stable government, a viable local economy and basic monetary infrastructure. Where there are restrictions on CVA use, it is delivered in the form of vouchers by default.

It was only after the 2004 Indian Ocean tsunami that the use of CVA made a significant appearance in modern humanitarian efforts, when several aid agencies piloted them as an alternative to in-kind aid. However, over the last ten years deployment of CVA schemes promoted by donors and key agencies have been steadily increasing. In 2016 alone, 17.9% of globally humanitarian assistance (CaLP, 2020) was in the form of CVA assistance, doubled from US$ 2.8 billion to US$ 5.6 billion (about three quarters of which was in cash). Figure 6 shows the relative weight of CVA as a percentage of assistance requirements for major emergency response campaigns that are ongoing in 2022. It sheds light on the differing extent of CVA utilization across countries, which ranges from the 9% on the total financial requirements of the South Sudan Humanitarian Response Plan (HRP) to the 40% of the Flash Appeal for Ukraine.

The shift away from in-kind assistance and towards CVA across humanitarian responses seems to depend on a variety of factors. Practitioners and the international literature (e.g., CaLP, 2018a) state that these include the geographical scope and underlying cause of the disaster, the predictability and speed of its onset, the maturity of affected countries' economy, the robustness of local financial infrastructure and commodity markets, and local cultural and social norms. That being taken into account, CVA is in principle a versatile, faster, cheaper and more traceable way of delivering assistance in disasters and crises of sudden onset; CVA can help deploy assistance in the immediate response phase of sudden crises, thereby circumventing the time needed to establish or activate physical SCs. In addition, as it puts from the onset financial resources in the hands of communities it can facilitate a prompter switch towards restoration and reconstruction. Furthermore, in contexts with local markets capable of delivering essential goods, CVA can preserve the viability of existing businesses by injecting liquidity into the local economy and thereby promote faster economic recovery. In short, cash assistance can function as a "shock absorber" for local contexts. In addition, CVA may help ensure that beneficiaries have the dignity and freedom to independently decide on their own recovery.

Figure 6. Utilization of CVA in recent major emergency responses



Source: Adapted from Development Initiatives (2022b)

That being said, the use of CVA may present challenges, especially in prolonged crises and in contexts in which misuse and misappropriation by intermediaries (e.g., vendors and commercial operators, financial institutions) are likely, or where local governments are party to ongoing conflicts. Cash injections may also worsen harmful household or community dynamics for vulnerable social groups, exacerbating gender-based violence for example, as there is a high likelihood of intended beneficiaries being forcedly deprived of their entitlements. Inherently vulnerable local commodity and financial markets, unable to respond to a surge in demand with adequate quantity, quality and mix of essential goods and services, may also make CVA unsuitable in some geographically extended humanitarian emergencies. Finally, CVA may have an unintended inflationary effect due to the material and sudden influx of cash into local markets, which could disrupt local economies in areas even beyond that affected by the disaster. It is essential, therefore, that humanitarian organizations conduct a thorough country- and local-level macro- and micro-economic, and socio-political assessment to determine what level of assistance it would be best to deliver in the form of CVA.

References

Alazmi, M. and Zairi, M. (2003), *Knowledge management critical success factors*, Total Quality Management, Vol. 14 No. 2, pp. 199-204.

Alderman, H., Gentili, U., & Yemtsov, R. (2018). *The 1.5 Billion People Question: Food, Vouchers, or Cash Transfers?*. The World Bank.

Allahi, F., Revetria, R., & Cianci, R. (2018). *Cash and Voucher Impact Factor in Humanitarian Aid: A System Dynamic Analysis*, Conference Paper.

Austin, A., Frize J., (2011) *Ready or Not? Emergency Cash Transfers at Scale*. Cash Learning Partnership.

Bailey, S., & Harvey, P. (2017). *Time for change - Harnessing the potential of humanitarian cash transfers*. Overseas Development Institute (ODI).

Balcik B., Beamon B., Krejci C., Muramatsu K., Ramirez M. (2010) *Coordination in humanitarian relief chains: practices, challenges and opportunities*, International Journal of Production Economics, 126, pp. 22-34.

Balcik B., Beamon B.M. (2008), *Facility location in humanitarian relief*, International Journal of Logistics: Research and Applications, Vol. 11 No. 2, pp. 101-21

CaLP. (2018a). *The State of the World Cash Report - Cash Transfer Programming in Humanitarian Aid*. Cash Learning Partnership.

CaLP. (2018b) *Cost-Effectiveness in Humanitarian Work: Cash-Based Programming,* Helpdesk report by Madgalena Mikulak https://www.calpnetwork.org/publication/cost-effectiveness-in-humanitarian-work-cash-based-programming/ (last visited December 2022)

CaLP. (2020). *The State of the World Cash Report – Cash and Voucher Assistance in Humanitarian Aid*. Cash Learning Partnership.

Coppola D. P. (2015). *Introduction to International Disaster Management*. Elsevier.

Cozzolino A. (2012) *Humanitarian Logistics and Supply Chain Management. Cross-Sector Cooperation in Disaster Relief Management*, Springer.

Cozzolino A., Rossi S., Conforti A. (2012). *Agile and Lean Principles in the humanitarian supply chain. The case of the United Nations world food programme*. Journal of Humanitarian Logistics and Supply Chain Management.

DeSmet B. (2007) *Supply Chain Strategy and Financial Metrics. The supply chain triangle of service, cost and cash*, Kogan Page Publishers.

Development Initiative (2022) *Tracking cash and voucher assistance*, Development Initiatives Poverty Research Report.

Dijkzeul D., Moke M. (2005). *Public communication strategies of international humanitarian organizations,* International Review of the Red Cross, vol. 87(860), pp. 673–691

ECHO (2015). *10 Common principles for multi-purpose cash-based assistance to respond to humanitarian needs*, Cash Learning Partnership (CaLP).

Gentilini U. (2015). *Revisiting the "Cash versus Food" Debate: New Evidence for an Old Puzzle?*. The World Bank Research Observer.

Grest M., Lauras M., Montreuil B. (2020) *A Humanitarian Supply Chain Maturity Model*, CoRe Paper – Practitioner-centered Logistics and Supply Chain Management in Crisis Response, Proceedings of the 17th ISCRAM Conference.

Gunasekaran A., Ngai E.W.T. (2003), *The successful management of a small logistics company*, International Journal of Physical Distribution & Logistics Management, Vol. 33 (9), pp. 825-42.

Harabuda M. (2017) *Supply Chain Management Maturity Level Assessment*, Defense ARJ, October 2017, Vol. 24 (4), pp. 656-681.

Harvey P., Proudlock K., Clay E., Riley B., Jaspars S. (2010). *Food Aid and Food Assistance in Emergency and Transitional Contexts: A Review of Current Thinking*. London: Overseas Development Institute (ODI).

Hitchen J., Branson N. (2015). *Cash transfers for Africa: A Primer*. Africa Research Institute.

Jahre M., Pazirandeh A., Van Wassenhove L. (2016) *Defining logistic preparedness: a framework and research agenda*, Journal of Humanitarian Logistics and Supply Chain Management, Vol.6 (3), pp. 372- 398.

Kovac G., Spens K. (2009) *Identifying challenges in humanitarian logistics*, International Journal of Physical Distribution & Logistics Management, Vol. 39 (6), pp. 506-528.

Kwon I.-W., Kim S.-H. (2018) *Humanitarian Supply Chain/Logistics: Roadmap to Effective Relief Effort*, Journal of International & Interdisciplinary Business Research, Vol. 5(6), p. 95-109.

Lechtenberg S., Widera A., Hellingrath B. (2017) *Assessing Vendor Managed Inventory (VMI) for Humanitarian Organizations*, International Journal of Information Systems for Crisis Response and Management, Conference paper, 2017.

Long, D.C. (1997) *Logistics for disaster relief: engineering on the run*, IIE Solutions, Vol. 29 (6), pp. 26-9 Long, D. C., Wood, D. F. (1995) "The logistics of famine relief." *Journal of Business Logistics*, pp. 213–230 Maskell, B. (2001), "The age of agile manufacturing", Supply Chain Management: An International Journal,Vol. 6 No. 1, pp. 5-11.

Mattinen H., Ogden K. (2006) *Cash-based interventions: lessons from southern Somalia*. Disasters, Vol. 30 (3): pp. 297-315.

McKinsey Quarterly (2008) *Enduring Ideas: The 7-S Framework*, available at www.mckinsey.com.

Mettler T. (2011) *Maturity Assessment Models: A Design Science Research Approach*, International Journal of Society Systems Science, vol. 1/2, pp. 81–98

Maunder N., Dillon N., Smith G., Truelove S., De Bauw V. (2015) *Evaluation of the Use of Different Transfer Modalities in ECHO Humanitarian Aid Actions, 2011-2014*. Publications Office of the European Union.

OECD (2017) *Cash-Based Response, World Humanitarian Summit - Putting policy into practice*. Organisation for Economic Co-operation and Development (OECD).

Office for the Coordination of Humanitarian Affairs (OCHA) (2022) *Global Humanitarian Overview 2022*, at https://gho.unocha.org/ (last consulted: December 2022).

Office for the Coordination of Humanitarian Affairs (OCHA) (2014) *Saving lives Today and Tomorrow*, p. 13; OCHA SLTT Web Final Single.PDF (unocha.org) (last consulted: November 2022).

Organization for Economic Cooperation and Development (2014) *Imagining More Effective Humanitarian Aid A Donor Perspective*, by Scott R., OECD Development Co-operation Working Papers No. 18, (last consulted: October 2022).

Oloruntoba R., Gray D. (2006) *'Humanitarian aid: An agile supply chain?'*, Supply Chain Management, March Overseas Development Institute, London (last consulted October 2022).

Pettit S., Beresford A. (2009) *'Critical success factors in the context of humanitarian aid supply chains'*, International Journal of Physical Distribution & Logistics Management Vol. 39 (6), 2009, pp. 450-468.

Piotrowicz W. D. (2018) *In-kind donations, cash transfers and local procrument in the logistics of caring for internationally displaced persons: The case of Polish Humanitarian NGOs un Ukrainan IDPs.* Journal of Humanitarian Logistics and Supply Chain Management, Vol. 8 (3), pp. 374-397.

Rekik M., Ruiz A., Renaud J., Berkoune D., Paquet S. (2013) *A Decision Support System for Humanitarian Network Design and Distribution*, Humanitarian and Relief Logistics, pp.1-20.

Richardson D., Leeuw S., Vis I. (2010) *Conceptualising Prepositioning in the Humanitarian Sector*, International Federation for Information Processing Conference proceedings, pp. 149–156.

Rougier E., Combarnous F., Fauré Y.A. (2018). *The "Local Economy" Effect of Social Transfers: An Empirical Assessment of the Impact of the Bolsa Família Program on Local Productive Structure and Economic Growth*, World Development, Elsevier, vol. 103(C), pp. 199-215.

Sandie Lie J.H (2020) *The Humanitarian-development nexus: humanitarian principles, practice and pragmatics*, Journal of International Humanitarian Action, Vol. 5 (19).

Sodhi M., Tang C. (2013) *Buttressing supply chains against floods in Asia for humanitarian relief and economic recovery*, Production and Operations management, vol. 23 (6), pp. 938-950.

Sohdi S., Tang C. (2014) *Supply-Chain Research Opportunities with the Poor as Suppliers or Distributors in Developing Countries*, Production and Operations Management, Vol. 23 (9).

Tappis H., Doocy S. (2018). *The effectiveness and value for money of cash-based humanitarian assistance: a systematic review*. Journal of Development Effectiveness, 10:1, pp. 121-144.

The Yellow House (2021) *Assessment of the Covid-19 Supply Chain System (CSCS) Summary Report*

The World Bank Group. (2016). *Strategic Note - Cash Transfers in Humanitarian Contexts*. The World Bank Group.

Thomas A., Mizushima M. (2005) Logistics training: necessity or luxury? *Forced Migration Review*, Issue 22, pp. 60–61.

Tomasini R.M., Van Wassenhove L.N. (2004) *A framework to unravel, prioritize and coordinate vulnerability and complexity factors affecting a humanitarian response operation*, Working Paper No.20 04/41/TM.IN SEAD, Fontainebleau, France.

Wang Y, Singgih M., Wang J., and Rit M. (2019) *Making Sense of Blockchain Technology: How Will It Transform Supply Chains?* International Journal of Production Economics, Vol. 211, pp. 221-236.

World Food Programme (2016) *UN Humanitarian Response Deposit 2015 in Review* (last consulted in November 2022).

World Food Programme (2017). *WFP SCOPE - Know them better, to serve them better.*

World Food Programme (2018) *Operational Resourcing Update. Overview of WFP's main needs and net funding requirements* (last consulted in November 2022).

World Food Programme (2020) *WFP COVID-19 Supply Chain System – Brief, 20 August 2020*, WFP COVID-19 Supply Chain System – Brief, 20 August 2020 (last consulted in November 2022).

World Food Programme (2022) *UN Humanitarian Response Deposit 2021 in Review*, (last consulted in November 2022).

UN/ISDR (2004), *Living with risk. A global review of disaster reduction initiatives*, Inter-Agency Secretariat of the International Strategy for Disaster Reduction (UN/ISDR).

Van Wassenhove L. N. (2006) *Blackett memorial lecture. Humanitarian aid logistics: Supply chain management in high gear.* Journal of the Operational Research Society, 57(5), 475–489.

Wang X., Li F., Liang L, Huang Z., Ashley A. (2015) *Pre-purchasing with option contract and coordination in a relief supply chain*, International Journal of Production Economics, vol 167 (9), pp. 170-176.

Whybard D. (2007) *Issues in managing disaster relief inventories*, International Journal of Production Economics, Vol. 108 (1-2), pp. 228-235.

Yang B., Burns N.D., Backhouse C.J. (2004), *Management of uncertainty through postponement*, International Journal of Production Research, Vol. 42 (6), pp. 1049-64

3. Assessing the Implications of Cash and Voucher Transfers in Humanitarian Assistance

3.1 Introduction

Humanitarian assistance plays a crucial role in responding to the urgent needs of people affected by man-made and natural disasters, and is led by a complex web of actors (Akl et al., 2015). Following the report of the High-Level Panel on Humanitarian Cash Transfers (2015), it is possible to distinguish different levels of humanitarian response mechanisms at both the national and international levels. The former are crisis responses directly operated by local communities, local stakeholders and national governments. However, due to inadequate responses and lack of capacity at the national level (Austin and Frize, 2011), international actors such as government donors, International Organizations and International NGOs play a crucial role in supporting national response and in managing all phases of humanitarian crisis.

This is becoming more and more essential since, although historically associated to the immediate response after the outbreak of a crisis, the concept of humanitarian assistance has evolved and increased its scope in dealing with protracted crises, including a rehabilitation and resilience-building component that cannot be managed by national actors alone. This aspect represents the shift by the international community from aid to assistance (ECHO, 2015) and, in particular, from the provision and distribution of goods in emergency situations to adopting a more holistic approach that places beneficiaries at the centre of humanitarian interventions by both fulfilling their immediate needs and ensuring proper levels of security, the restoration of service levels, and the building of capacity at a local level (Rougier *et al.,* 2018). In doing so, humanitarian actors help beneficiaries by means of different forms of assistance (providing food, shelter, health services, water, sanitation, and hygiene as well as other primary services, which are delivered to targeted beneficiaries in different ways) or transfer modalities. These transfer modalities can be broadly distinguished as (Gentilini, 2015): in-kind transfers, voucher transfers and cash transfers. In-kind assistance, through global procurement and supply-chain systems, has historically been the most traditional way to deliver aid (Tappis and Doocy, 2018; Alderman *et al.*, 2018). However, transitioning from the role of implementers to that of capacity builders (Greijn *et al.*, 2015), and due to the shift from aid to assistance, International Organizations are gradually transitioning to cash and vouchers to reduce the dependency of beneficiaries on global supply chains and generate a greater impact, meeting local communities' specific needs. Vouchers represent a modality of assistance that allows beneficiaries to either exchange them with pre-determined commodities (Commodity vouchers) or with products not exceeding the monetary value of the voucher (Value vouchers) (Maunder *et al.*, 2015). Cash, on the other hand, is a form of assistance that provides money directly to individuals, households or

communities. Whereas in-kind transfers are more connected to the concept of “aid”, i.e., covering the immediate needs of beneficiaries by delivering specific commodities through global supply chains, the flexibility that cash interventions allow is in line with the concept of “assistance”, thus meeting needs across multiple sectors that may go well beyond those in the short-term (Harvey *et al.,* 2010). As a result, since their inception, the success of these two transfer modalities has contributed to a significant shift from in-kind transfers to cash and voucher transfers in humanitarian responses. Their total amount has doubled since 2016, from USD 2.8 billion to a planned USD 5.6 billion in 2019, representing 17.9% of international humanitarian assistance (CaLP, 2020), from 10.6% In 2016, according to the Global Humanitarian Assistance Report (2018). This shift provides evidence on the trend of consolidation of cash modalities as the primary option when responding to humanitarian needs (OECD, 2017; Hitchen and Branson, 2015).

Recognizing the growing interest in cash and voucher transfers as instruments to reform the way humanitarian assistance is delivered, the present study sheds light on the potential and future managerial impacts from an organizational perspective when the strategic choice to transition from in-kind to cash and vouchers is made. To investigate this, the present study provides a framework which can help in mapping the current status and the foreseeable impacts of cash and voucher schemes. In particular, the framework will help answer the following research questions:

Q1: How can we define cash and voucher schemes in humanitarian aid?

Q2 Which managerial variables and organizational settings might facilitate the integration of cash and voucher modalities?

Q3 To what extent has the UN World Food Programme organization embedded such new delivery modalities in its current business model?

In line with the above, the next section will illustrate an exploratory literature review aimed at assessing the current state of the art of cash and voucher transfers, both in terms of an agreed common definition as well as in terms of their main benefits and risks. Secondly, the methodology adopted to conduct the research will be introduced. The WFP will then be presented as case study further to developing a framework that can be used to identify the managerial variables to be considered in order to properly manage the transition to cash and vouchers from an organizational perspective. Lastly, future impacts and implications at a system-wide level will be discussed.

3.2 The State of the Art of Cash and Voucher transfers

3.2.1 Defining Cash and Vouchers

Humanitarian aid actors may respond to the urgent needs of beneficiaries by using different forms of assistance. The way these forms of assistance are transferred to targeted beneficiaries determines a transfer modality. Currently, the humanitarian system broadly distinguishes between three main transfer modalities:

- In-kind transfers;
- Voucher transfers;
- Cash transfers;

In-kind transfers consist of providing assistance to people in the form of commodities: food, clothing, medicines, personal care items etc. Of course, in-kind assistance requires an efficient organizational capacity and effective planning of all the phases of a logistics cycle (procurement, transportation, storage and distribution of commodities) in order to reach targeted beneficiaries in the most appropriate way.

Voucher transfer is an assistance modality provided in the form of paper and electronic entitlements that can be exchanged in designated shops or fairs. Usually, both paper and electronic vouchers are classified into two categories (WFP, 2014):

- *Commodity vouchers*, which can be exchanged for a given commodity, and their value therefore is expressed in quantities and types of goods and services a person can exchange them for;
- *Value vouchers*, whose value is expressed in monetary terms. The way people can use these vouchers is similar to cash, but they usually have a specified list of commodities they can buy using the voucher.

Finally, with cash transfers assistance is provided in the form of money to individuals, households or communities. Money can be given to beneficiaries in different ways, and examples include giving cash directly, using electronic cards associated (but not always) to a bank account, or through the provision of mobile phone transfers. Despite the broad categorization of the three main transfer modalities, and although in-kind assistance has been the most traditional way to deliver aid and is often considered the most appropriate, a significant shift from in-kind transfers to cash and voucher transfers is evident in humanitarian response efforts.

The importance of scaling up the use of cash and vouchers as vehicles to reform the current humanitarian architecture has been a topic of debate in several humanitarian efforts (Harvey *et al.,* 2010), aiming to provide a common ground and universal principles for action. Nevertheless, it is evident from both the literature and the major commitments adopted by the humanitarian

system that there is a lack of clarity when trying to define cash and voucher modalities. As a result, while cash and vouchers may be perceived as the future of humanitarian assistance, the absence of a clear definition when referring to these two transfer modalities has led to a perceived ambiguity in the concept among the different humanitarian actors. Terms such as “Cash and Voucher Assistance” (CVA) mentioned by CaLP (2020) or Cash-Based Transfers (CBT) by WFP have been evidenced, with no convergence on a distinct definition. Although the debate has not yet come to a conclusion, it is possible to identify an attempt to fill this gap by means of public commitments and major studies. This should help prevent problems arising when measuring and reporting cash and voucher schemes.

Based on reports and interviews, it is possible to argue that at the technical level, there are some similarities between cash and vouchers, e.g., they both strengthen local markets and use a people-centred approach (Creti, 2010). However, even though vouchers ensure more traceability for reporting purposes than cash, on the other hand they do not contribute to a full power of choice to beneficiaries, which is what unrestricted cash does. Therefore, for consistency purposes, this paper distinguishes between:

- "Cash transfers" when referring to the cash modality alone;
- "Cash and vouchers" or "cash-based transfers (CBT)” when referring to both cash and voucher modalities.

CBT is the general term used by the WFP when referring to cash and value vouchers, excluding commodity vouchers[1].

3.2.2 Benefits and Risks

Cash and Value vouchers have the potential to be a cheaper and more flexible means of delivering humanitarian assistance, allowing people to choose what they need the most, thus enhancing their control, choice, dignity and purchasing power (Allahi *et al.,* 2018). As emerged during the interviews, cash puts people at the centre of decision-making, allowing beneficiaries to determine what should be prioritized, and thus abandoning a more “paternalistic” approach to delivering aid. In addition, the interviews with WFP managers suggested that delivering cash means also working “beyond sectors”, i.e., thinking in terms of addressing people's multiple needs simultaneously. Such way of delivering humanitarian assistance beyond sectors represents a significant change to the traditional cluster approach outlined in the 2005 UN Humanitarian Reform (Steets and Ruppert, 2017), a reform introduced to strengthen the effectiveness of humanitarian actions in terms of predictability, accountability and partnership

[1] *Previous literature, including the 2008 Policy and the 2014 Manual use the term "Cash and Vouchers", including therefore commodity vouchers. The term CBT was evidently refined later on.*

(Missoni and Alesani, 2014). Therefore, it is possible to argue that the looser the degree of restriction applied to cash transfer is, the more organizations are asked to work at an inter-cluster level. In addition, it has been demonstrated that cash creates positive multiplier effects on local economies, since people are likely to buy goods and services on the local market (Davies and Davey, 2018). Cash, therefore, can work either as a source of emergency relief, but also as a holistic response that empowers people to rebuild their livelihoods and strengthen their resilience.

Aside from the above benefits and success of alternative transfer modalities, donors and humanitarian actors are demonstrably frequently reluctant to shift to cash and voucher programmes (Evans and Popova, 2014). This may be linked to the fact that such transfer modalities are perceived to pave the way for new types of risks and unintended effects that are less likely to occur when transfers are in-kind. Among others, one of the main risks related to cash and voucher transfer modalities are those with a programmatic nature and are related to the need to ensure that, for reporting purposes, cash is used as planned and that it will not be diverted, misappropriated or misused. Secondly, among other risks it is also possible to identify: corruption, fraud, and staff security when transporting cash (Gordon, 2016). For example, security issues and misappropriation have been identified as the two major perceived risks in the challenging contexts of northern Mali (CaLP, 2018b).

Looking at the potential risks for beneficiaries, it is also important to consider that cash can exacerbate tensions within households, thereby creating negative dynamics for the most vulnerable categories, namely women and children (Peppiatt et al., 2001). Contextual economic impacts are also risks that cash and voucher schemes can bring. Beneficiaries are going to use cash to buy goods and services, but markets might be unable to respond to an increase in the demand, e.g., in the aftermath of a natural disaster. Also, the increased demand for commodities can create unexpected inflationary effects in local economies (Peppiatt et al., 2001). Before opting for cash and transfer modalities, therefore, it is fundamental to assess whether the local economy is ready to absorb the projected influx of cash.

Finally, from the interviews it emerged that it is also essential to measure the level of preparedness of the organization to transition to a new delivery modality, i.e., how to ready the entire organizational setting for the shift to cash and voucher transfers. For these reasons, and to serve the objectives of this paper, in the following section a theoretical framework is developed that could be used to assess the organizational “maturity” when the strategic decision to implement cash and voucher modalities is made.

3.2.3 Theoretical Framework

The potential of cash and vouchers to innovate and improve the efficiency and effectiveness

of humanitarian response has been recognized, and the transition to cash and vouchers as new assistance delivery modalities is a matter of strategic re-orientation. However, organizations still seem to have concerns regarding alignment of their managerial variables and organizational settings to this transition. In this regard, cash (particularly when unrestricted and unconditional) is the modality that raises the highest number of concerns. In this section, we will identify a framework that could help determine a set of managerial variables and, based on the variables, analyse how and to what extent they are and should be evolving—both within an organization and from a system-wide perspective—to properly respond to the strategic decision to transition to cash and voucher modalities.

In this regard, a useful model, capturing different variables that can be used to assess an organization's strategic re-orientation is the McKinsey7-S model, developed by Robert H. Waterman, Jr. and Tom Peters. This model represents a 'constellation of interrelated factors that influence an organization's ability to change' (McKinsey Quarterly, 2008). Focusing on these seven factors helps the organization to highlight the areas requiring greater attention and commitment.

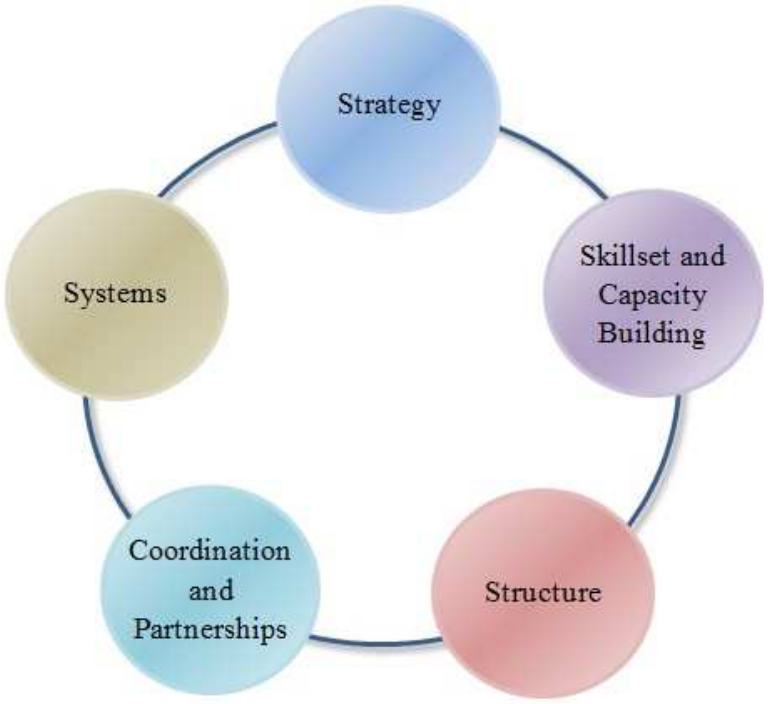
Based on the experience of WFP, the present study proposes an interpretation of the McKinsey 7-S model, merging the seven variables into five in order to provide a more specific framework that can appropriately assess what organizations should be prepared to change in order to effectively mainstream cash and vouchers in their organizational setting, and based on that, trying to delineate the possible future impacts and scenarios. The "Staff" and "Skills" factors of the traditional McKinsey7-S model have been incorporated into one variable denominated "Skillset and Capacity Building". Then, a new variable emerging as crucial based on the interviews has been added: "Coordination and Partnerships". This element has a more external/system-wide nature than the others, and refers to coordination mechanisms with other international humanitarian actors. Lastly, the variables "Style" and "Shared value" have been removed, since they were partially analysed when addressing the other variables. The five variables we identified (Figure 7) shall now be described under the umbrella of the cash and voucher transfer shift:

- *Strategy*: this variable describes the role the organization wants to play in relation to cash and vouchers. In particular, whether or not the organization is translating the major commitments to increase the use of cash and vouchers into its strategic framework and, if so, how is this shift will modify the organization's current strategy;
- *Structure*: in this variable we explore whether the commitments made in the strategy are reflected in a systematic change in the structure. In particular, we investigated how the new 'cash and voucher' delivery modalities are embedded within the organizational structure, e.g., whether fully dedicated units or teams (both at HQ and country offices (COs)) have

been set up or whether organizational units are reshaping their profile and footprint to properly function under the new delivery modality;

- *Systems*: this variable analyses whether and how the organization has invested in effective systems, processes and procedures for cash and vouchers throughout the entire project management cycle;
- *Skillset and Capacity Building*: in this variable we explore how the organization is adapting its workforce to the new cash and voucher modalities e.g., creation of new positions, abolishment of traditional roles, or reconfiguration of roles, as well as the level of expertise on cash and vouchers, both at HQ and in the field;
- *Coordination and Partnerships*: finally, this variable assesses the stage of maturity of the organization with respect to inter-agency coordination i.e., if harmonized approaches and coordination mechanisms are put in place to avoid overlaps and duplication. We then discuss whether cash transfers should, when unrestricted and addressing multiple needs, be under the responsibility of one coordinating organization and/or one shared delivery infrastructure and, if so, what the implications of this willingness to transcend traditional sectors are with respect to inter-agency tensions and competition.

Figure 7: Five variables to manage the change to cash and voucher transfers



Source: own interpretation from The McKinsey 7-S Model

3.3 Methodology

To answer the research questions, the present paper relies on a triangulation strategy using two different data-collection methods aimed at ensuring and checking the consistency of findings (Williamson *et al.*, 2002). The first method used is based on a literature review to provide exploratory research to understand and assess the state of the art of cash and voucher transfers. To do this, two online databases (Scopus and Web of Sciences) were selected and searched to ensure retrieval of a broad range of articles. In addition, we reviewed a significant volume of reports, studies, reviews and articles on the subject of cash and voucher transfers published by the international community. In particular, we focused on reviewing official WFP documentation. As part of the eligibility criteria, the selected articles included in the review were published between 1990 and 2021, and both theoretical and empirical studies were included. All research designs were allowable (e.g., case study, experiment, questionnaires). As part of the second pillar of the triangulation method, anonymous semi-structured interviews on the subject of cash-based transfers (CBT) were conducted on 15 WFP employees. WFP employees interviewed included people from different functional units involved in CBT at HQ, regional and country offices, respectively, but also staff from other units not strictly linked to CBT. In order to have a more comprehensive perspective, the employees interviewed also belonged to different job grades: senior managers, middle managers and consultants. A general interview guide based on the five variables of the modified McKinsey model was followed, as reported in the table 2 below, but not so rigidly as to interrupt the natural flow of conversation.

Table 2: Main interview questions for WFP employees

Question 1	Based on your experience and role within the organization, what is WFP's current strategy on CBT, and how do you think WFP has renewed it to embed such modalities?
Question 2	How has the organizational structure been reshaped to incorporate new functional units which require subject matter expertise and operational knowledge on CBT? Has this had an impact on the footprint and tasks also at field level (e.g., country offices)?
Question 3	What are the main systems WFP has been putting in place to design, implement, monitor and report on financial flows?
Question 4	How has the workforce changed given the need to rely more on financial experts rather than logisticians? Do you perceive there will be a sort of substitution effect, or has WFP decided just to up-skill the existing staff?

Question 5	What is the stage of maturity of inter-agency coordination? Given the rise of unrestricted and multipurpose cash, which by nature is non-sectorial and beyond clusters, do you believe this may lead to tensions and competition among organizations? Can WFP be designated as a cash leader in the future with respect to multipurpose cash, covering all beneficiaries' basic needs?

Interviews play a fundamental role in the triangulation process in order to increase the reliability of (double-checking) the information emerging from the literature review and analysis of internal reports provided. By taking the example of WFP (case of WFP CBT)—one of the first organizations that made this strategic re-orientation and one which has now achieved a robust level of expertise in efficiently and effectively managing such modalities—such analysis aims at providing a system-wide perspective on how and to what extent humanitarian organizations should align their managerial variables when the strategic decision to shift to cash and vouchers is made. Moreover, an important advantage of the case study methodology—which serves the scope of the study—is the opportunity for a holistic view of the process. Indeed, 'the detailed observations entailed in the case study method enable us to study many different aspects, examine them in relation to each other, view the process within its total environment and also use the researchers' capacity for understanding' (Gummesson, 1988:76).

3.4. Case Study: managing the transition. The WFP's Cash-Based Transfer System

3.4.1 Strategy

As already reported by CaLP (2018a), institutional support for cash and vouchers among donors and decision makers saw a significant acceleration from 2015. The subsequent CaLP report (2020) confirms this trend: donors are more and more systematically considering cash and vouchers as a response tool. To translate such commitments into concrete actions, some organizations have decided to adopt new policies and change their strategic approach, as well as to set quantitative targets to increase the use of cash and vouchers. However, aid delivered in these forms is (and is foreseen to be) more and more concentrated towards a smaller number of actors delivering higher proportions of cash and vouchers. It is evident that the big change brought by cash and vouchers in the way humanitarian assistance is delivered forces organizations to re-shape their strategic roles and positions, and how the decision to be part of this big reform could be reconciled with their traditional mandate.

Organizations may therefore be resistant to change due to a restrictive interpretation of their mandate. However, the donor community too may sometimes show its reluctance to fund cash and voucher interventions, as the risks connected to them (diversion, misuse, misappropriation) are culturally less tolerated compared to loss of in-kind aid, e.g., spoilage, expiry or theft. This

can of course lead to a vicious cycle: organizations are either unwilling to invest in a proper cash and voucher strategy, or unable to do so due to the lack of funding hampering their ability to set up sufficient infrastructure for operations to be effective, and consequently demonstrate accountability and trust towards the donor community.

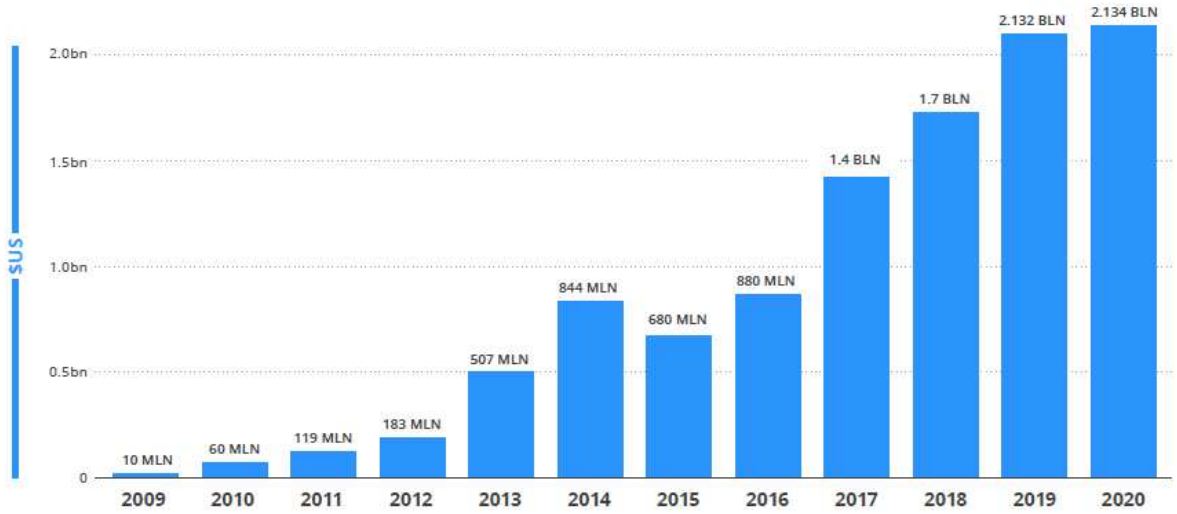
The World Food Programme, on the other hand, had extensive financial resources to invest in cash and vouchers, making use of core unearmarked funding especially for capacity building (CaLP, 2018a). This of course allowed WFP to become one of the early implementers of cash and voucher transfers, to progressively refine its infrastructure, leading to its position as experts in the field today. Indeed, after the first pilot schemes launched in 2005, in 2007 WFP issued an interim joint directive so as to provide guidance and procedures to follow for WFP country offices that had already started investing in cash and vouchers (WFP, 2014). Their use was then formalized by the Executive Board through the 2008–2013 Strategic Plan (WFP, 2008), which signalled the shift from food aid to food assistance. As explained in the previous section, cash and voucher transfers are closely linked to the concept of assistance, and the new Strategic Plan therefore allowed them to find their place in this new way of thinking about humanitarian response. In 2008, the WFP Cash and Vouchers Policy was published. To further enhance the integration of the two modalities, a Cash-For-Change initiative was then launched in 2010 to develop their corporate capacity and establish the appropriate systems and processes. A directive on Cash and Voucher Programming was issued for their effective scale-up into WFP programming. In 2014, the second edition of the Cash and Vouchers Manual was published, and CBTs are now part of WFP's standard toolbox as one of the modalities that can be used to address food insecurity and nutrition issues; this is intensively stressed by the organization, and several interview respondents mentioned that the lack of a specific strategic document on CBT can also be seen as a deliberate choice, as WFP wants CBT to be considered not as a standalone activity, but rather an internalized option among others.

The use of CBT has increased rapidly over the past years, making WFP the largest humanitarian agency in terms of cash transfer programmes (WFP, 2017b). In 2020, the actual CBT value delivered to beneficiaries amounted to USD 2.13 billion (representing 37% of WFP's total assistance portfolio), and 68% of this amount (USD 1.45 billion) was distributed in emergency response operations. Figure 8 shows the increases in scale of CBT from 2009 to 2020.

The rapid increase of transferred CBT is especially evident from 2017 onwards, although from 2019 to 2020, it was only +0.1%. This might be due to the early phases of the COVID-19 pandemic, whose health insecurity combined with the socioeconomic fallout clearly made an impact on international organizations' regular operations. That being said, WFP has worked to support governments in their cash-based responses to mitigate the socioeconomic impacts of

COVID-19. Indeed CBT, which requires more managing of financial flows and use of digital and remote channels, can be seen as a more streamlined instrument to be further scaled up in moments of crisis like COVID-19.

Figure 8: Total actual CBT value transferred



Source: Cash-Based Transfers (CBT) at WFP, 2020 Report

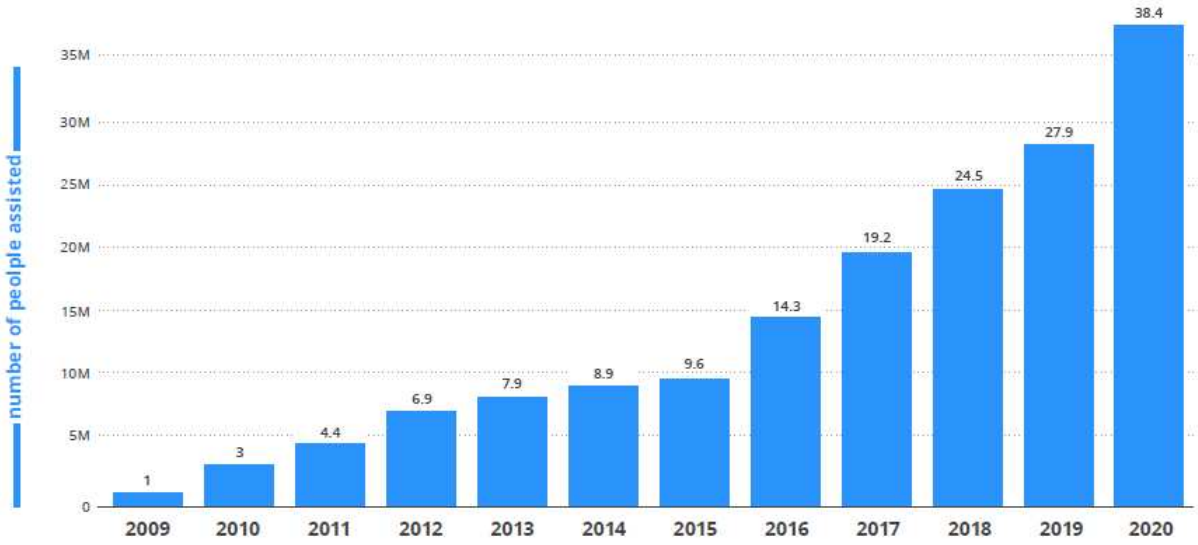
In terms of numbers of beneficiaries reached, the increase from 2019 to 2020 is instead quite significant, as 38.4 million were the people benefiting from cash and vouchers in 2020, representing a 37% increase (Figure 9).

Higher transfer costs for implementation plans continue to be allocated to in-kind assistance (47% in 2020), even if there has been a progressive increment in the CBT share (excluding the period 2019–2020, when it decreased slightly from 38% to 37%). In the WFP 2021–2023 Management Plan (WFP, 2020b), of particular interest is the foreseen use of unrestricted cash, representing 24% of transfer costs (compared to 11% for value vouchers and 4% of commodity vouchers, all for a total of 37% share of the CBT assistance portfolio). Such figures may reflect a strategic direction of WFP towards focusing more on basic needs through an unrestricted formula, and confirming the Programme's position as the largest user of cash programming transfers among humanitarian agencies. Already the 2017–2021 Strategic Plan seemed to confirm this direction, stating, 'WFP is fully committed to assuming this leadership role [to scale up CBT], and providing cash-based transfers for a range of basic needs in contexts where it is appropriate' (WFP, 2017b, p. 13).

It is true that WFP claims that its focus is and will continue to be food security and nutrition, and that such requirements can be better addressed when meeting all beneficiaries' essential

needs at the same time to ensure households do not redistribute their resources at the expense of food security and nutrition; however, in a context in which the humanitarian community is stressing the importance of a coordinated needs-based approach to cash transfers, this can be seen as an attempt from WFP to progressively shift its strategic direction and gain sufficient relevance to naturally become a sort of cash provider for all services (eventually setting up and administering a common infrastructure where organizations can channel their funds); and of course, the experience and expertise WFP has built so far contribute to reinforcing its position and reputation.

Figure 9: CBT Beneficiaries reached



Source: Cash-Based Transfers (CBT) at WFP, 2020 Report

Nonetheless, interview respondents did not seem to see WFP in this future strategic position, as the use of cash to address basic needs seems always to be linked to the overarching food provision mandate. However, whether or not this will in fact become the future strategic position of WFP, there will naturally be implications not only for its traditional overarching strategy, but also to the variable coordination and partnerships with other humanitarian actors. It is evident that the humanitarian landscape is changing, and as previously reiterated, there is a global push for multi-purpose cash, greater efficiency and sectorial integration.

3.4.2 Structure

As emerged from the literature review and interviews, effective incorporation of cash and vouchers requires a systematic re-organization of the traditional structure in order to manage financial flows instead of (or in parallel with) flows of commodities.

Consistently with the big shift at the strategic level, WFP has re-organized its structure and functional CBT areas (Programme, Finance, Supply Chain, IT, Security and Management) at HQ, regional bureaux and COs in order to make CBT an established component of WFP's humanitarian operations and not just an ad hoc standalone activity. At the HQ level, a CBT organization division within the Programme & Policy Development Department was established. At the CO level, one representative from each functional unit is present, and they are grouped by Management into cross-functional cash and voucher working groups to ensure that all responsibilities are addressed and there is an efficient segregation of duties.

Apart from the evident and necessary amplification of functions, units and roles within WFP's general structure to make space for CBT, one might ask whether there could also have been a parallel reduction of the typical roles, functions and units devoted to in-kind assistance. As reiterated throughout the study, cash and voucher schemes require the capacity to manage financial flows, and the in-kind humanitarian logistics cycle may therefore be subjected to a quantitative reduction. This is expected to lead to a contraction of the tasks assigned to the Supply Chain, and an expansion of the responsibility given to Finance (and of course, such a process is incremental when transitioning from vouchers to simple cash). In other words, the question is whether WFP has operated or will operate (considering the growing percentage of aid delivered in the form of CBT) a significant quantitative and qualitative change to the footprint of certain divisions and units. This can be crucial when looking at the field, particularly at COs. The management of financial flows, which in general requires more financial than logistical expertise, as well as different monitoring capabilities to avoid different types of risks, can potentially lead to a more centralized way of delivering, i.e., expanding HQ functional units and roles and reducing those of COs. And for a very decentralized organization like the WFP, this is an important aspect that should not be underestimated.

Interview respondents state that CBT has avoided costly supply-chain management, progressively reducing some logistical functions. But at the same time they claim that in CBT there is not only a component related to financial transactions, but also an important retail management aspect and related supply-chain costs and functions; these are and will continue to be core to make sure that (i) there is a market ready to respond to the demand; (ii) contractual agreements are effectively set up; and (iii) negative risk-related impacts on the local economy are avoided. The work of cash working groups in COs to make effective context-specific analyses is therefore fundamental and should be encouraged.

Another aspect raised by respondents is that the places in which WFP operates do not allow an almost complete centralization of functions from HQ, as sometimes operations are

conducted in very remote locations where financial transactions are not as smooth as in more developed countries (e.g., no mobile phone service, and access to services such as banks or shops is limited and sometimes far from where beneficiaries live etc.). Hence, constant field monitoring is necessary. In addition, most of the stress is put on the fact that CBT is one component of the toolbox: this means that, essentially, programme assessment remains the same, and that CBT is just one of the options available. Therefore, WFP will continue to perform needs assessment, and if cash is feasible then it will be chosen as a delivery modality; otherwise, in-kind assistance should be preferred.

From the interviews, it seems that WFP has not made or is not thinking of making such radical changes in its structure. So far, there has been a balanced coexistence between in-kind and CBT, and functions for CBT have been mostly amplified. However, if WFP continued to increase its percentage of CBT to deliver aid, it is expected that this would naturally lead to a shrinkage of some its traditional core in-kind functions, having impacts on HQ and CO structures, but also on the staff profiles.

3.4.3 Systems and Processes

Financial resources as well as technical expertise (CaLP, 2018) are required to set up new tools to design, implement, monitor and report on financial flows. A particular area of concern is how to manage the risks connected to cash transfers and establish appropriate internal control mechanisms and mitigation measures. As previously stated, potential risks include fraud, corruption, misuse and misappropriation, market instability, improper targeting and gender protection, as well as those connected to service provider (banks, mobile money providers) and merchants' (retailers, wholesalers) capacities. From the literature review we evidenced that few organizations have as yet put in place or been able to create and update their systems and tools. When it comes to reporting on outcomes, some organizations claim that it is much more difficult to establish systems to measure and prove the effectiveness of cash transfers for those sectors where sectorial outcomes are determined by a complex range of supply and demand factors e.g., healthcare (CaLP, 2018a). As emphasized by the "Strategic Note - Cash Transfers in Humanitarian Contexts" commissioned by IASC from the World Bank Group (2016), one solution for reducing this lack of efficient systems and processes would be having common operational systems to share costs, expertise and save time. However, several organizations seem to be some "steps behind", that is, they haven't yet found and determined their stance or role as regards cash and vouchers, i.e., they have no clearly defined strategic position.

WFP, on the other hand, has carved out for itself the opportunity to invest consistently to reform processes and systems for cash and vouchers, creating a solid value chain in assessment,

design, delivery, monitoring and evaluation. First and foremost, WFP has developed a cash and vouchers Business Process Model (BPM). The BPM is a diagram guiding the set-up and implementation of cash and voucher schemes at the country level across two dimensions:

- When read vertically, it informs on the phases and processes of the project cycle, as well as on systems and tools used;
- When read horizontally, it informs on the functional units involved in the implementation, and their responsibilities (namely Management, Programme, Supply Chain, Finance, IT and Security).

In addition, an important platform for beneficiary registration, intervention set-ups, distribution planning, transfers and distribution reporting is SCOPE, the WFP's beneficiary and transfers management platform, which works as a central repository for beneficiary data (WFP, 2017a). SCOPE can be used to manage the entire intervention lifecycle, and its use is particularly important for managing financial transactions when WFP cannot (or prefers not to) rely on service providers. This of course makes the transfer process more streamlined, but at the same it is an example of a system raising some concerns: in particular, the question is whether organizations should aim to build their in-house IT systems to cover every aspect of the programme cycle, or decide to leverage the expertise of the private financial sector, which may sometimes have more to offer in terms of technological solutions. In fact, the risks of making mistakes in security, data protection and privacy, but also those linked to tracking cash can materialize easily if organizations are not sufficiently equipped with robust IT systems. An attempt to overcome such issues is represented by blockchain, a revolutionary technology aiming at eliminating financial intermediary services and thereby enhancing transparency, anti-corruption practices, privacy for beneficiaries and reduction of payment costs. Blockchain is being tested also with a view to overcoming the current fragmentation of humanitarian aid, where the same beneficiaries are targeted by different organizations, each setting up a contract with a different financial intermediary. Through blockchain as an open system with all beneficiary identities on it, organizations could tailor their operations and services. This would enhance harmonization and coordination, as well as optimising humanitarian aid. As part of a pilot scheme known as ‘Building Blocks’, in 2017 WFP started rolling out blockchain, first in Pakistan and then in Jordan, serving Syrian refugees. The pilot scheme in Jordan has allowed WFP to reduce Financial Service Providers (FSP) fees by 98%, and relies on biometric authentication powered by UNHCR: refugees buy food via iris scanning, by which their identity is checked allowing the transaction to be completed.

In the long term, WFP’s strategy is to extend blockchain technology not only to cash transfers, but also to other uses, such as supply chain management. Although it is now at an early stage,

it is evident that in the near future its systematic potential is likely to change relations between WFP and its partners. Fewer third parties will be involved in humanitarian interventions, but WFP will have to develop a strong and robust capacity, probably leveraging new companies with expertise in blockchain. Also, one may question whether blockchain will replace SCOPE, but at this stage WFP opts for using them in tandem.

3.4.4 Skillset and Capacity Building

Organizational capacity also involves the capacity for human resources, which is another critical component complementing and supporting the changes made in the strategy, organizational structure, systems and processes to embed cash and vouchers. As reported by CaLP through its survey (CaLP, 2018a), however, investments made by organizations on staff capacity are generally not sufficient to build effective and durable competence and expertise on cash and vouchers. The general tendency is still to think of cash and vouchers as siloed activities. This concerns not only an organization staff but also local actors, where external capacity is often preferred to investing locally. The report stresses the need to upskill existing staff and recruit skilled staff to embed cash and vouchers.

UNHCR and WFP have both made significant investments, having received specific capacity-building funds from donors. WFP strengthened its capacity building in the area of cash investing by around USD 10 million over three years (CaLP, 2018a), renewing roles, functions and responsibilities at the corporate level. A particular aspect WFP has been committing to is the development of training materials, both face-to-face and e-learning. According to the WFP 2017–2019 Management Plan (WFP, 2016), since 2015 WFP had provided CBT training for staff in all functional areas in all regions, as well as to some 150 staff working for external partners. As mentioned above, COs have been provided with CBT staff organized into cash working groups; regional bureaux have specialist CBT Advisors, and HQ staff in each functional unit have been trained for coordination purposes. What has been discussed about the variable "Structure" can converge here with respect to skillsets: to complement the amplification of functions and units in the structure, WFP has evidently invested in building new CBT capacities within its staff. However, one might question whether the new set of skills required to manage CBT has led or will lead to a more drastic (though progressive) adaptation of the staff to cater to more CBT functions i.e., not only upskilling existing staff but also changing the workforce. This means creating new positions while also abolishing more traditional ones. For example, the streamlining of the logistical aspect in the structure may also be reflected in a reduction of work for supply chain and logistics experts, and a consequent abolishment of certain redundant profiles. At the same time, new roles

specifically devoted to expertise in managing financial transactions may be created.

There are no specific statistics delineating the impacts of CBT with respect to the creation of new positions and abolishment of old ones. The responses from the interviews do not highlight an evident substitution effect; even if new positions have been created (above all those of cash experts for support), the old ones have not been drastically abolished, as the in-kind component is still perceived as core. Instead, stress has been placed on the re-profiling efforts of WFP to re-train the existing workforce. Another interesting point mentioned by respondents is that there are not “in-kind jobs” versus “cash jobs”. This is particularly reflected in the characteristics of the Terms of Reference of new job profiles; WFP frequently keeps job titles general (e.g., financial expert; business support assistant etc.), although CBT expertise is clearly mentioned in the requirements. This highlights the fact that CBT is considered more as a modality, rather than a new work stream. It is, however, possible that in the future, as new systems and tools (e.g., blockchain) are developed, the incremental approach to CBT will have to change, leading to a more radical adaptation of the workforce. It is unlikely that the whole workforce can be maintained when this occurs.

3.4.5 Coordination and Partnerships

Apart from what can be considered a “softer” form of coordination—where organizations decide to collaborate on a cash transfer programme but each one contributes to cover the needs connected to its mandate—interview respondents stated that the humanitarian community is now stressing the relevance of multi-purpose/unrestricted cash. This means that cash assistance shall be provided to potentially cover all the basic needs of beneficiaries, who then have the freedom to spend the money received to cover what they need the most. This automatically entails multi-purpose cash demands for inter-cluster coordination, and asks humanitarian organizations to transcend their sectors; it represents a major shift from the cluster approach of the 2005 UN Humanitarian Reform, whose aim was precisely to coordinate each organization around sectorial lines in order to minimize competition for funds. The overarching recommendations to leverage unrestricted and multi-purpose cash to better serve beneficiaries involves the donors funding large-scale cash transfer responses and eventually deciding on one or a few organizations to oversee the delivery, and on the part of humanitarian organizations, a willingness to look beyond their self-interests and reduce their individual role (Bailey and Harvey, 2017).

In this new context, it is worth mentioning some key examples that emerged during the interviews shedding light on what WFP is doing to reinforce coordination and efficiency, while reducing overlap. ECHO alone has entirely funded the largest cash assistance programme (ESSN) in Turkey, with an initial budget of 348 million in 2016. The programme functions

through the Turkish Government welfare system with support from Turkish Red Crescent (TRC) and WFP, and it consists of a monthly multi-purpose cash transfer scheme to help refugees in Turkey living outside camps (while e-voucher for food assistance is provided for refugees in camps). Beneficiaries are supplied with a debit card topped up every month, which can be used to pay in shops or withdraw cash at ATMs. In line with the multi-purpose cash assistance goals, beneficiaries are entitled to purchase the items they need.

Its expertise being widely recognized, so far WFP has been offering its own delivery platforms for use by implementing partners and governments. One example is the CBT Special Account, established in January 2015. Through said financial platform service, WFP distributes funds on behalf of other partner organizations that have decided to leverage WFP's expertise on CBT and use its established contracts with service providers. In this way, fragmentation is reduced in favour of a single delivery platform and a single delivery service. To cover the administration costs of the CBT Special Account, partner organizations pay WFP a 1% fee. In terms of reporting purposes, funds are kept in separate wallets, so that it is possible to track the funds spent in each sector. Trying to match the evolution to multi-purpose/unrestricted cash with WFP's long-established expertise on cash transfers as described in the examples above, there is the possibility that the Programme is latching onto the growing orientation towards unrestricted cash to consolidate its already robust strategic position and gain further relevance to become a natural cash leader. The examples above show that there is willingness to build (and maybe lead) a common system-wide infrastructure, and this would bring further strategic advantages for WFP.

From the perspective of other organizations, although there is consensus that it makes no sense for each one to develop infrastructure to design, implement, track, monitor and evaluate cash programmes, the idea of having a "cash leader" that cuts across sectors and covers services and infrastructure for the whole system, to which organizations can contribute channelling their resources, is not very well received. While there are many examples of sharing common platforms and tools, nobody is clearly volunteering to step back (Bailey and Harvey, 2017).

Organizations like UNHCR play a key role in cash transfers (UNHCR, 2016). As a needs-based organization for refugees, UNHCR delivers comprehensive multi-sectorial programmes which can give it an important comparative advantage in leading cash-based interventions. Cash transfers are also a significant component of UNICEF's mandate. As reiterated in its 2018–2021 Strategic Plan (2018), The Fund plans to reach 172 million vulnerable children through its supported cash transfer programmes by 2021. UNICEF is also testing the potential of cash transfers through social protection programmes, and clearly states that multi-purpose cash should be preferred whenever feasible (UNICEF, 2017).

Interview respondents claim that it is very difficult to understand the current global dynamics, but the adoption of system-wide facilities led by one or few organizations to channel funds is perceived as positive in terms of scaling up multi-purpose and unrestricted cash in order to serve multiple needs and eliminate overlap and duplications; however, at the same time the aim to surpass clusters and sectors is likely to exacerbate the historical competition among humanitarian actors. If ever organizations with less cash maturity decided to channel their resources, they would have to completely re-organize their structure, staff and systems around fewer financial resources; the result is that key functions, units and roles are likely to shrink because the bulk of the work is transferred de facto to another organization. Also, it can become more difficult to demonstrate the achievement of the sector-specific outcomes that are part of their mandate (for example, how can UNICEF ensure that the needs of children are specifically addressed, and UNHCR that refugees are properly targeted), and therefore to ensure accountability towards donors, beneficiaries and the international community in general.

Cash is therefore an instrument to reform the effectiveness and efficiency of the present humanitarian action, but also a tool that overturns the way aid has been traditionally delivered. The core of the question is that the non-sectorial nature of cash forces organization to go beyond their sectors and think about how to deliver a more cohesive response: however, at the same time organizations know that this is likely to lead to natural selection. The organizations with greater cash expertise may be chosen to lead the cash delivery, and those less prepared will see their comparative advantage progressively reduced. Based on the current situation, several new possible scenarios may emerge, several of which will be discussed in the next section.

3.5 Conclusions: Implications and Future Scenarios

The above demonstrates that the support for cash and voucher transfers, particularly unrestricted cash following a needs-based approach, to respond to humanitarian crises is growing quickly. When implemented effectively, cash and vouchers can have more benefits in terms of Value for Money compared to in-kind, but above all, they change the way beneficiaries have been so far considered. Cash (and vouchers with a loose degree of restriction) give beneficiaries the power of choice, making them the real decision makers, thereby overturning the traditional paternalistic approach of humanitarian action.

However, as outlined throughout the study, the spectrum of potential risks that have to be identified, assessed and mitigated also changes. Such modalities may not always be the best approach, for example when markets are unable to respond to an increase in the demand for commodities. Some humanitarian actors continue to reasonably remark on the importance of contextual factors that will determine whether cash is appropriate, over its simple routine

consideration (Metcalfe-Hough et al., 2018). Cash and vouchers therefore significantly challenge the way humanitarian assistance has been traditionally delivered and organizations have so far structured their operating models.

In line with this and based on the example of WFP and through an interpretation of the McKinsey7-S model, a framework of five managerial variables that can be useful to assess the state of maturity of an organization deciding to incorporate cash and voucher transfers is proposed. The results show that organizations have to re-think their strategic position and orientation, as cash and vouchers necessitate the capacity to manage financial flows. Significant investments have to be made in order to build robust systems and processes, as well as on staff capacity and reorganization of the entire structure, both at HQ and country level. When looking at the “Coordination and Partnership” variable, the stress put on multi-purpose cash is advancing the questions of whether it would be better to have only one or few organizations leading cash programmes and acting on behalf of the whole system. Based on the above analysis and discussion throughout the five managerial variables, the study now traces three possible dynamics and further scenarios.

First, one possible option could be that cash and vouchers will be integrated more systematically within each organization’s architecture. Focus will be put on translating the high-level commitments into proper strategic frameworks, setting cash and voucher targets and changing existing policies. This requires a solid workforce with expertise and competence on cash and vouchers and will consolidate the cluster approach of the 2005 Humanitarian Reform using the cash and voucher modalities as new possible options to deliver humanitarian aid. This proposition has several gaps that make it improbable. The present situation already shows that there are “mature” organizations and others that have difficulties to incorporate cash and vouchers. More importantly, the global push for cash transfers asks to surpass a silo-based approach and represents a big change in terms of better cohesion and integration, efficiency and effectiveness in humanitarian responses.

Second, the growing importance of unrestricted and multi-purpose cash can lead to the rise of more mature organizations to be elected as cash providers for the whole system. This will contribute to a model that is led by an organization elected as “first mover” with others taking the role of followers. WFP is an example of ‘first mover’ in developing a solid cash and voucher infrastructure. This second proposition requires organizations to step back – but in a context where organizations like UNHCR and UNICEF may be unwilling to do so since they are developing a robust cash infrastructure.

A third possible option is still the creation of a system-wide central infrastructure to manage the delivery of cash, but not administered from an ‘external’ entity, like the UN Secretariat. This proposition could materialize especially when taking into consideration the recent reforms of

the UN Secretary General (UNSG) António Guterres aimed at increasing the efficiency of the UN system, reducing overlap and improving inter-agency coordination to better deliver on the SDGs. Trying to match the global push for a more coordinated cash transfer system, and the new orientation towards a centralization of the UNSG, one might ask whether a further pillar of the UN reform could be also the centralization of the cash infrastructure within the Secretariat, in order to avoid having a UN agency alone (or few of them) as a cash leader and a potential 'cash competition' among humanitarian organizations. The impacts of this last possible option would be a significant reduction of the footprint of all organizations who have started integrating cash and vouchers within their architecture, but especially those that are now the most cash mature (like WFP): they would have to re-organize again their infrastructure, paradoxically stepping back to their initial situation where the in-kind component was the main delivery modality, and where cash represented only a very small portion of their operations.

In the present study the relevance of the framework we developed and the description of the three possible future scenarios is to help and support organizations to assess all the possible implications (both internal and external) when transitioning to cash and vouchers, whose potential is key in order to best serve the diverse needs beneficiaries and put them at the centre of humanitarian interventions, as well as to create multiplier positive effects on local economies.

However, the study presents some limitations. First, the paper is a first attempt to delineate the managerial impacts of cash and vouchers; second, the paper is mainly based on one organizational perspective – WFP experience. Lastly, although the above mentioned direction towards a more centralized system together with the recognized benefits of the cross-sectoral nature of cash is likely to lead to radical changes in the way humanitarian assistance has so far been structured, this growing field of research makes it difficult to predict what are the possible future dynamics, therefore further analyses are needed to consolidate evidence.

References

Akl E.A., El-Jardali F., Bou Karroum L., El-Eid J., Brax H., Akik C., et al. (2015) *Effectiveness of Mechanisms and Models of Coordination between Organizations, Agencies and Bodies Providing or Financing Health Services in Humanitarian Crises: A Systematic Review*. PLoS ONE 10(9): e0137159.

Allahi F., Revetria R., Cianci R. (2018) *Cash and Voucher Impact Factor in Humanitarian Aid: A System Dynamic Analysis.*

Alderman H., Gentili U., Yemtsov R. (2018) *The 1.5 Billion People Question: Food, Vouchers, or Cash Transfers?*. The World Bank.

Austin A., Frize J. (2011) *Ready or Not? Emergency Cash Transfers at Scale*. Cash Learning Partnership.

Bailey S., Harvey P. (2017). *Time for change - Harnessing the potential of humanitarian cash transfers*. Overseas Development Institute (ODI).

CaLP (2018a) *The State of the World Cash Report - Cash Transfer Programming in Humanitarian Aid*. Cash Learning Partnership.

CaLP (2018b. *CTP in challenging context: Case study on CTP and risks in northern Mali*. Cash Learning Partnership.

CaLP (2020) *The State of the World Cash Report –Cash and Voucher Assistance in Humanitarian Aid*. Cash Learning Partnership.

Creti, P. (2010) *The impact of cash transfers on local markets: A case study of Unstructured markets in Northern Uganda*. Cash Learning Partnership, Oxford, UK.

Creti P., Jaspars S. (2006). *Cash Transfer Programming in Emergencies*. Oxford: Oxfam Publications.

Davies S., Davey J. (2008). *A Regional Multiplier Approach to Estimating the Impact of Cash Transfers on the Market: The Case of Cash Transfers in Rural Malawi*. Development Policy Review, 26: pp. 91-111.

ECHO (2015). *10 Common principles for multi-purpose cash-based assistance to respond to humanitarian needs*, Cash Learning Partnership (CaLP).

Evans D. K., Popova A. (2014) *Cash transfers and temptation goods: a review of global evidence*. The World Bank.

Urquhart A., Tuchel L. (2018) *Global Humanitarian Assistance Report 2018*, Development Initiative.

Gentilini U. (2015) *Revisiting the "Cash versus Food" Debate: New Evidence for an Old Puzzle?*, The World Bank Research Observer.

Gordon L. (2016) *Risk and humanitarian cash transfer programming*. Overseas Development Institute (ODI).

Greijn H., Hauck V., Land T., Ubels J. (2015). *Capacity Development Beyond Aid*. SNV Netherlands Development Organisation; European Centre for Development Policy Management (ECDPM).

Gummesson E. (1988). *Qualitative methods in management research*. Lund, Norway: Studentlitteratur, Chartwell-Bratt.

Harvey P., Proudlock K., Clay E., Riley B., Jaspars S. (2010). *Food Aid and Food Assistance in Emergency and Transitional Contexts: A Review of Current Thinking*. London: Overseas Development Institute (ODI).

High Level Panel on Humanitarian Cash Transfers. (2015). *Doing cash differently - How cash transfers can transform humanitarian aid*. Overseas Development Institute (ODI).

Hitchen J., Branson, N. (2015). *Cash transfers for Africa: A Primer*. Africa Research Institute.

Maunder N., Dillon N., Smith G., Truelove S., De Bauw V. (2015). *Evaluation of the Use of Different Transfer Modalities in ECHO Humanitarian Aid Actions, 2011-2014*. Publications Office of the European Union.

McKinsey Quarterly (2008) *Enduring Ideas: The 7-S Framework*. Available at www.mckinsey.com.

Metcalfe-Hough V., Poole L., Bailey S., Belanger, J. (2018) *Grand Bargain annual independent report 2018*. Overseas Development Institute (ODI).

Missoni E., Alesani D. (2014). *Management of International Institutions and NGOs*. Routledge

OECD (2017) *Cash-Based Response, World Humanitarian Summit - Putting policy into practice*. Organisation for Economic Co-operation and Development (OECD).

Peppiatt D., Mitchell J., Holzmann P. (2001) *Cash transfers in emergencies: evaluating benefits and assessing risks*. London: Overseas Development Institute (ODI).

Repositioning the United Nations development system to deliver on the 2030 Agenda: ensuring a better future for all. Report of the Secretary-General (2017). General Assembly seventy-second session, A/72/124 - E/2018/3.

Rougier E., Combarnous F., Fauré Y.A. (2018) *The "Local Economy" Effect of Social Transfers: An Empirical Assessment of the Impact of the Bolsa Família Program on Local Productive Structure and Economic Growth*, World Development, Elsevier, vol. 103(C), pp. 199-215.

Steets J., Ruppert L. (2017). *Cash Coordination in Humanitarian Contexts*. Global Public Policy Institute.

Tappis, H., Doocy, S. (2018) *The effectiveness and value for money of cash-based humanitarian assistance: a systematic review*. Journal of Development Effectiveness, 10:1, pp. 121-144.

The World Bank Group (2016) *Strategic Note - Cash Transfers in Humanitarian Contexts*. The World Bank Group.

UNHCR (2016) *UNHCR Strategy for the Institutionalisation of Cash-Based Interventions 2016-2020.*

UNICEF (2017) *Cash Based Programming in UNICEF's Humanitarian Action.*

UNICEF (2018) *UNICEF Strategic Plan 2018-2021.*

WFP (2008) *WFP Strategic Plan 2008-2013*.

WFP (2014) *Cash and Vouchers Manual*.

WFP (2016) *WFP Management Plan (2017–2019)*.

WFP (2017a) *WFP SCOPE - Know them better, to serve them better.*

WFP (2017b) *WFP Strategic Plan (2017-2021).*

WFP (2020a) *Cash-Based Transfers (CBT) at WFP, 2020 Report.*

WFP (2020b) *WFP Management Plan (2021–2023).*

Williamson K., Burstein F., McKemmish S. (2002) *Research Methods for Students, Academics and Professionals (Second Edition),* Information Management and Systems, pp. 25-47.

4. Artificial Intelligence for the Public sector and IOs: state of the art and potential

4.1 Introduction

Scientific research is increasingly focusing on technological design, application of innovations, and related challenges (Vial, 2019; Ghisleri *et al.*, 2018; Liao *et al.*, 2017). In spite of this, little attention has been paid to the human-related impacts of this transformation or its consequences for organizations, employees, and work systems. As a result, a major risk in the fourth industrial revolution (FIR) age, which is commonly associated with 'business digitalization' (that is, using digital technologies to change business models and create new value-producing opportunities), is to build organizations solely around technological advances and follow technological imperatives without critical thinking.

Focusing on the public sector, digitalization strategies and tools emerging to date range from advanced robotics and integrated cyber-physical production systems to predictive analytics for decision-making. In addition, artificial intelligence (AI) is finding applications in various areas, from improving the efficiency and effectiveness of humanitarian cash and voucher assistance (CVA) delivery to energy consumption optimization. In fact, AI is among the key drivers of the FIR and the greatest value aggregator in several industries (Simões *et al.*, 2022). After a series of fluctuating fortunes since its inception in the 1950s, AI has been experiencing an increasing revival in recent years (Sun and Medaglia, 2019). From simplifying processes and tasks, re-shaping our daily activities (Cath *et al.*, 2018), to contributing to sustainability goals, AI holds tremendous value opportunities to improve, transform and innovate our societies and lives, and its transformative impact is just beginning. Although mostly driven by inventions made in the private sector (Wirtz and Müller, 2019), AI is beginning to make its way in the public sphere, also powered by the advancements in Big Data (Duan *et al.,* 2019). Despite this growing interest and recognition of its importance for the improvement of human well-being, academic research investigating and exploring the potential of AI as well as its challenges for the public sector, and how to make this digital transformation journey 'human-centred' is still in its infancy.

The aim of the present study is therefore to fill this research gap by (i) framing the state of the art of AI, (ii) applying it to public sector as a relevant ecosystem and field of analysis and (iii) assessing the status of organizational preparedness for human-centred digital transformation with a focus on the potential of AI in Human Resource Management (HRM).

To achieve research objectives (i) and (ii), the study relies on a systematic literature review of academic journal articles and books. The 'Preferred Reporting Items for Systematic Reviews and Meta-Analyses' (PRISMA approach) was used for identification, screening and eligibility of the studies, as reported in Liberati *et al.* (2009). To achieve research objective (iii), the study

relies on a comprehensive survey and semi-structured interviews on the status of preparedness for digital transformation in the public sector. Recommendations based on the findings are presented in the conclusions to suggest and further understand which are the key elements that need to be taken into account to get started and scale up the usage of AI in the public sphere with a 'human-centred' approach.

4.2 Methodology

4.2.1 Literature review

To identify eligible studies, three strategies were used. First, an electronic search of two databases, Scopus and ISI Web of Knowledge, was conducted, selecting the period from January 1990 to December 2020 in order to ensure a broad range of scientific output. The search included journal articles and books looking at AI applied to the public sector and international organizations, with particular emphasis on the domain of HRM. The study was limited to the year 2020 in recognition of the exponential increase in publications in the field of artificial intelligence (AI) over the years that followed. This decision was made to streamline the review process and concentrate on the antecedents of AI, allowing for a more focused analysis of the factors leading to the development of AI technologies. The aim of narrowing the temporal scope to January 1990–December 2020 was to capture a snapshot of the relevant antecedents, providing a comprehensive understanding of the events and advancements that have paved the way for contemporary AI applications. The search was last conducted in August 2022.

The second phase of retrieval was to search for journal articles on AI in the public sector published in the following 12 public administration and policy journals: *Journal of Public Administration Research and Theory; Public Administration Review; Public Administration; Public Management Review; American Review of Public Administration; International Public Management Journal; International Review of Administrative Sciences; International Journal of Public Administration; Administration and Society; Governance; Policy and Internet; Information Polity* and *Government Information Quarterly*. The last search was conducted in August 2022.

Focusing specifically on the field of AI with particular emphasis on its applications to HRM, we also contacted an expert to advise us about relevant publications to be included in the review.

4.2.2 Eligibility Criteria

The 'Preferred Reporting Items for Systematic Reviews and Meta-Analyses' (PRISMA approach) criteria were used to select eligible studies. Thus, only studies meeting the following criteria were included in the systematic review:

- *Topic:* records contained in their titles or abstracts the following keywords:

- *“artificial intelligence” AND “public sector” OR “public admin*” OR “international org*” OR “international institution*”;*
- *“artificial intelligence” AND “public sector” OR “public admin*” OR “international org*” OR “international institution*” AND “machine learning” OR “deep learning*” OR “big data” OR “development” OR “technological innovation”;*
- *“artificial intelligence”* AND *“human resource management”.*

- *Study design:* we included both theoretical and empirical studies. All research designs were allowable (e.g., case study, experiment, questionnaires), while systematic reviews were excluded to avoid including studies several times;
- *Year of publication*: we included studies published from January 1990 to December 2020;
- *Language*: only studies published in English were included;
- *Publication status:* only peer-reviewed journal articles and books were considered.

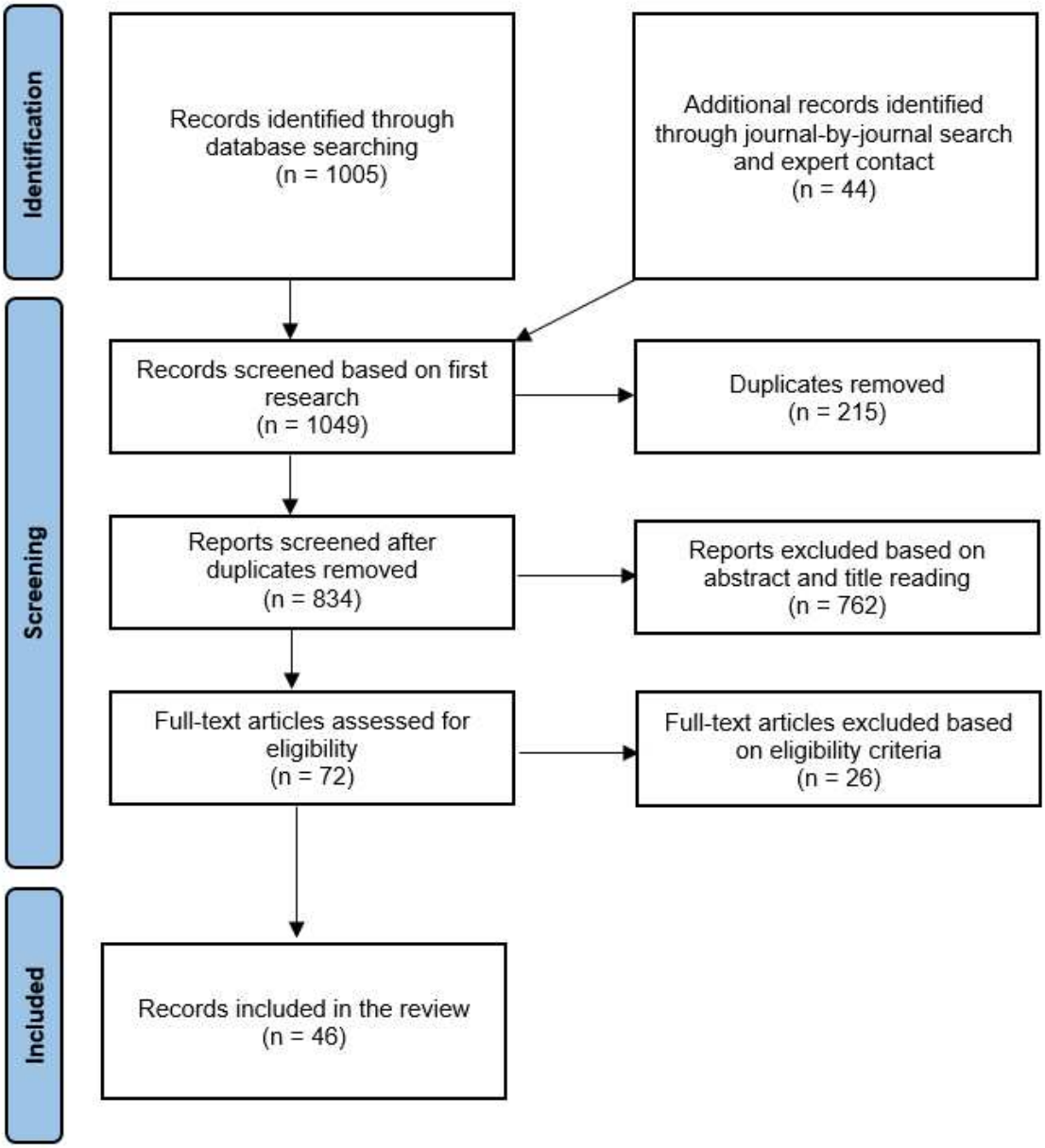
With reference to the keywords “artificial intelligence” AND “human resource management” it must be specified that the articles drawn from the search also address private sector-based AI applications. This choice was made after encountering a paucity of literature on AI and HRM in the public sector (fewer than 5 publications found) in order to (i) have a broader overview of this dimension and (ii) explore practices which could potentially be applicable to the public sector. Finally, we also decided to include articles addressing big data in the public sector since we believed they were relevant in terms of investigating the antecedents in the adoption of AI.

4.2.3 Data Selection

Following the above-mentioned eligibility criteria, the literature search returned a total of 1.049 articles, distributed as follows: 1.005 articles from the database search (640 from ISI Web of Knowledge and 365 from Scopus); 44 articles resulting from a search on the 12 selected journals and after contacting an expert. Duplicates were removed in this step, giving us a total of 834 articles. In the second step, the title and abstract of the articles were screened in order to exclude articles providing theoretical explorations and general overviews of AI, as well as articles focusing on a too specific area (e.g., medicine, engineering, mathematics and computer science). The number of articles resulting from this screening step was 72.

The third step involved reading the full text of the 72 articles in order to attain a more precise selection of the papers. The final number of articles selected after this last procedure was 46. The PRISMA flow diagram (Figure 10) shows the entire data selection process.

Figure 10: PRISMA Flow Diagram



4.2.4 Survey and Semi-Structured interviews

The survey was circulated to a wide range of experts involved in organizational development and digital transformation, such as change-management professionals, IT specialists, and HR practitioners in the public sector. 123 responses were received. A subset of 16 respondents was selected, based on their experience, the significance of their exposure to digital transformation processes, and their willingness to participate in a follow-up discussion, and interviewed for an hour each (semi-structured interviews), in order to complement and qualify the survey data.

4.3 Results

4.3.1 Results of the Systematic Review

The results of the systematic review are presented as follows: first, a description of the selected studies based on their geographical orientation and area of focus; second, an attempt to present a clear picture of what AI is, a crucial step given the lack of a common accepted definition in the literature; and third, addressing the main determinants of AI i.e., the enabling factors which either positively or negatively drive and influence its adoption and implementation. Subsequently, an overview of the main benefits and challenges in implementing AI is provided, both from a general public sector perspective and focusing on the two domains mentioned above.

Journals and Countries

The 46 articles included in the systematic review were from 35 different journals, while one article came from the *Intelligent Systems Reference Library* book series. Although the distribution of the selected articles across journals was almost 1:1, the journals containing more than one article were *Policy and Internet* (4), *Government Information Quarterly* (4), *Public Administration Review* (3), *Journal of Public Administration Research and Theory* (2), *American Review of Public Administration* (2) and *Strategic HR Review* (2). As a confirmation of the growing interest and rise in AI in recent years stated in the Introduction, 65% of the articles (30) were published between 2018 and 2020 alone, whereas the remaining 35% (16) between 1996 and 2017.

It is worth also mentioning which regions or geographic context the selected studies address. As shown in Table 3, the regions receiving more attention are North America (22%) and Europe (22%), although 30% of the studies did not focus on a specific geographic context. Within this last category, however, the majority of studies addressed AI in the context of HRM.

In contrast, it became evident that there is a large gap in AI research with reference to Africa, Asia and Latin America. This lack of studies may be due to the fact that such regions, which incorporate many developing countries, are facing the complexities intrinsic to scaling up AI, as opposed to developed countries where research is more consolidated. Lastly, we decided to include the category “developing world” since two articles did not focus on a specific region, but rather provide an overview of how AI can serve the needs and overcome the challenges faced by developing countries in general.

Table 3: Studies by geographic context

Geographic context	Number
Africa	1 (2%)
Asia	1 (2%)
Europe	10 (22%)
Latin America	1 (2%)
North America	10 (22%)
Cross-national comparison	7 (15%)
Developing world	2 (4%)
Region not specified	14 (30%)
Total	**46 (100%)**

Classification

According to the findings based on the eligibility criteria, we decided to group the articles into four categories based on their focus area (see Table 4).

What is interesting to note from the results is that within the first category no academic article specifically addresses the role of AI in and for international organizations. This is of course a crucial aspect, though as previously evidenced, AI in the public sector sphere is still making its way towards a full utilization and implementation, and only few integrated frameworks have been developed (Wirtz and Müller, 2019).

Table 4: Studies by category

Category	Number
AI in the public sector and international organizations	20 (43.5%)
AI in HRM	17 (36.9%)
Big data in the public sector	9 (19.6%)
Total	**46 (100%)**

As stated in the eligibility criteria section, the category of AI in HRM also contains articles addressing private sector-based AI applications in order to provide a broader overview of its applications given its scarcity in the public sector.

Defining Artificial Intelligence

This section provides an overview of the definitions of AI adopted in the selected articles from both a quantitative (across the categories listed in Table 5) and a qualitative perspective. The aim was to develop an integrated definition that could be relevant for the purpose of this study. It is interesting to note that there is not a common, universally accepted definition of AI. Instead, different approaches and perspectives are used to build what characterizes it. From a quantitative point of view, within the category "AI in the public sector and international organizations" (20 studies), nine articles provide a definition of AI adaptable to the public sector context; four address and define its sub-fields, such as data mining or machine learning; and seven do not provide any definition of AI at all. In the second category "AI in HRM" (17 studies), AI and related sub-fields are defined in eight articles, whereas in the remaining nine no definition is provided. However, as a sub-field of AI, it is worth mentioning the occurrence of a new term and related definition, namely *Machine Learning for Development (ML4D)*: this is a term coined exclusively for machine-learning applications for developing countries. Lastly, in the category "big data in the public sector" (nine articles) AI is not defined, but rather mentioned (two articles) or addressed as an application of big data (one article). Table 5 summarizes the findings described above.

Table 5: Studies by category and definition

Category	**AI is defined**	**AI sub fields are defined**	**No definition provided**
AI in the public sector and international organizations	9	4	7
AI in HRM	6	2	9
Big data in the public sector	0	0	9
Total	15 (33%)	6 (13%)	25 (54%)

From a qualitative perspective, we evidenced three main general approaches when defining AI: (1) AI as a cluster (2) AI compared to human intelligence (3) AI functions and abilities. Several examples are provided, although it should be noted that for some of them more than one of three above approaches applies. In Agarwal (2018), AI is defined by taking into consideration the technologies it is composed of, i.e., machine learning, cognitive computing and language processing. AI is therefore the 'box' containing the application and combination of these

technologies which ‘attempt to replicate or outperform our own cognition’. A similar interpretation of AI as a cluster of technologies and approaches is adopted by Khakurel *et al.*, (2018) who further state that AI mimics ‘cognitive functions’ and exhibits ‘aspects of human intelligence’.

Some authors, on the other hand, preferred to first define what constitutes ‘intelligence’ so as to have a common construct that can be eventually adapted across agents, thus conceiving intelligence as substrate-independent (Bullock, 2019). For example, by making reference to Max Tegmark’s (2017) definition of intelligence, Bullock identifies it as the ‘ability to accomplish complex goals’. From this statement, AI is therefore conceived as a type of intelligence belonging to nonorganic, mechanical entities that can accomplish complex tasks, guiding automation. Similarly, in Corvalán (2018) intelligence transitions from human to artificial when ‘the ability to process information to solve problems and to make decisions’ comes from intelligent algorithms.

As discussed by Wirtz *et al.,* (2019), the special feature of AI, which we also noted in almost all of the definitions we analysed, is that (i) it replicates human thinking and learning, and that (ii) it is therefore able to solve complex problems and find solutions. However, we also consider it appropriate to focus on definitions of AI stating *how* it can replicate or at least ‘approximate the capabilities of the human brain’ (Barth and Arnold, 1999) and is able to make decisions and solve complex problems. To this end, Duan *et al.*, (2019) adds two new elements affirming that AI ‘learn(s) from experience’ and ‘adjust(s) to new inputs’. In addition, AI is able to perceive its environment (Dalenberg, 2017; Sun and Medaglia, 2019), learn and identify patterns (Sousa *et al.,* 2019) to make such decisions. It is worth also mentioning the general *intent* and *purpose* of AI, which according to van Esch *et al.,* (2019) is to ‘conduct activities autonomously and independently from any external inputs’. In order to provide a clear understanding of what AI is and how it can be effectively applied to the context of our study, it is possible now to build our definition, which takes into consideration those mentioned above. Thus, we define AI as: *A set of technologies (such as machine learning, natural language processing and speech recognition) that i) are able to replicate human intelligence and ii) enable machines to perceive the environment, identify patterns and learn; and use such learnings to make autonomous decisions and achieve predetermined objectives through continuous adjustment to new inputs.*

The term *artificial intelligence* and *machine learning* are often used interchangeably. However, as per the above definition, machine learning is in fact a sub-field of AI that enables data-driven predictions to be made from various data sources (Anastasopoulos and Whitford, 2018).

Determinants

In this section we provide an analysis of the main determinants in the use of AI, interpreted as those factors which, in both positive and negative terms, influence and enable its adoption.

The first observation is that 31 articles out of 46 (67%) explicitly mention one or more determinants of AI. Based on the systematic review, we decided to group the main determinants emerging from the studies into three main dimensions:

- Data and technology: advancements in technologies and data growth;
- Organizational setting: the main managerial variables of an organization (where we identified a strategic, administrative and people (HR) function);
- Policy: the process of making efficient and effective public policy decisions.

Table 6 shows the occurrences of the determinants across each dimension.

Table 6: Breakdown of the determinants encountered

Determinant dimensions	**Number**
Data and technology	18 (38%)
Organizational setting	20 (43%)
Strategic	*4 (20%)*
Administrative	*7 (35%)*
People (HR)	*9 (45%)*
Policy	8 (19%)
Total*	**47* (100%)**

*Some studies included more than one determinant or subgroup

When considering the first dimension, recent technological advancements, but in particular the necessity to handle the so-called big data, are determinants that are very often cited. Big data can be defined based on four common characteristics: volume, velocity, variety and complexity (Desouza and Jacob, 2014). Thus, because of the massive and unstructured nature of information it produces, new and more powerful processors and algorithms are required (Ingrams, 2018). From this perspective, big data does not hold any value per se; rather its value is in the ability to collect and process it in order to generate meaningful information, which can then be turned into applicable knowledge (Anastasopoulos and Whitford, 2018). Many determinants found in the selected studies are linked to the organizational dimension. Given their diversity and areas of application, we decided to further classify them into three sub-groups: strategic function, administrative function and people (HR) function (the latter

embedding both an administrative and a strategic component). With respect to the strategic organizational function, innovation and how to measure it in public organizations (Pandey *et al.,* 2017) as well as motivation from private sector efficiency gains (Androutsopoulou *et al,* 2019) are seen as a key strategic enablers to the adoption of AI.

Regarding the second sub-group, the need to systematize procedural and repetitive tasks (Androutsopoulou *et al*., 2019), streamline the complexity and uncertainty of tasks (Bullock, 2019), and more generally the objective of enhancing operational efficiency in administration are crucial components encouraging the use of AI in public organizations.

The third sub-group is related to the HR function of an organization, which is also the domain the present study aims at addressing in greater detail. Before analysing the determinants emerging from the systematic review, it is worth mentioning one important trend in HRM, that is, the progressive transformation of HR from a purely administrative function to a more strategic one. Over the past 30 years, HR has in fact evolved from being an operational and transactional arm to a strategic player that brings added value by contributing to the business and supporting a more strategic approach to management. Along this line, many organizations saw in AI an opportunity to steer the HR function towards this shift and embed AI-powered applications throughout the entire HRM cycle with a view to improving and reshaping the entire HR service. In this context, some examples of the determinants emerging from the selected studies are presented in Table 7. They have been grouped into a 'talent acquisition' and a 'talent management' phase of HRM. As we can see from Table 7, the potential of AI is called to support many HR activities, and its role may vary according to the degree of use and "pervasiveness" an organization wants it to have. Thus, an organization may limit AI to provide operational support to existing HR tasks, e.g., in the talent-acquisition phase through the use of automation in candidate pre-screening; using chatbots for recruitment screening; and by making use of virtual agents as recruitment assistants. The benefits, along with the challenges, of these applications will be discussed in the following sections.

Secondly, an organization may decide to use AI from a more systemic perspective, leveraging it as a tool that not only provides operational efficiency, but also supports decision-making processes. An example within talent management is how AI-powered applications can help make informed and strategic workforce planning decisions by predicting the skills that will be needed through a continuous analysis and monitoring of talents.

Table 7: AI determinants in two phases of the HRM

HR phase	Determinant
Talent Acquisition	• Expert shortage (Androutsopoulou *et al.,* 2019) • Recruiting the best talent (Upadhyay and Khandelwal, 2018) • Determination of salary and benefits for applicants based on their qualifications (Saidi Mehrabad and Fathian Brojeny, 2007)
Talent Management	• Measuring employee engagement; applying digital tools to improve workforce productivity, retention and satisfaction (Burnett and Lisk, 2019) • Employees need analysis to enhance connection between employers and their workers (Jesuthasan, 2017) • Employee performance forecasting (Kirimi and Moturi, 2016) • Managing diversity in the workforce (Upadhyay and Khandelwal, 2018)

In this way, AI can enhance quality of HR talent management practices and drive effectiveness. Finally, in the policy dimension, examples of the determinants mentioned are linked to discretion and enhancing decision-making for the public sector (Barth and Arnold, 1999; Bullock, 2019) as well as how to leverage AI when addressing inequalities in income, education, living and neighbourhood environment, health and safety within cities (Suel *et al*., 2019); but also how to transform places into IT-friendly environments (Cath *et al.,* 2018) and respond to the greater request of transparency of public administration (Magnini *et al.,* 2000).

Prospective Benefits and Challenges

This section analyses the main benefits and challenges associate with AI adoption, as reported by the selected studies. Benefits resulting from the implementation of AI are reported by 70% of the studies (32). According to the findings, we decided to group them into 4 categories as in Table 8. An initial observation from Table 8 shows that the majority of benefits fall under the operational efficiency and effectiveness dimension of an organization. With reference to efficiency, replacing people by AI and automation can alleviate staff workload and reduce the administrative burdens (Androutsopoulou *et al.,* 2019; Khakurel *et al.,* 2018; Sousa *et al.,* 2019), thereby saving time and costs. In addition, the capacity of AI to address the complicated nature of big data—specifically its variety and veracity (Anastasopoulos and Whitford, 2018)—leads to improved information processing, optimized extraction of useful data (Wirtz *et al.,* 2019; Corvalán, 2018), and overall quality of results.

It should be noted that positive outcomes in terms of operational efficiency also affect the more administrative component of the HR function, as anticipated in the previous section. The use of AI and automation leads to a number of benefits, including eliminating transactional work for

staff and facilitating many HR activities, like the entire recruitment process which becomes faster and smoother (Rab-Kettler and Lehnervp, 2019). Thus, automating HR processes in talent acquisition would result in freeing up HR staff from doing administrative tasks (screening resumes, responding to candidates' queries, scheduling interviews etc.), allowing them to become more 'strategic players'.

However, to complement the operational efficiency that allows HR to focus more on the creation of a strategic and added value HR service, we have seen that AI can be adopted from a more systemic perspective, as a tool that not only mimics the human function but contributes to improving the overall quality of the HR service and the entire people experience. In this sense, leveraging AI means not only automating of processes to improve efficiency (with AI as an end in itself) but also augmentation and support in re-designing and innovating HR to be more people-centred. Examples include more strategic workforce planning that is able to predict and consequently model the workforce dynamics; recruitment processes that are candidate-centric, thus focusing on the right fit for the organization; and improved performance management that identifies the key drivers of productivity (DiRomualdo *et al.,* 2018).

Table 8: Categorization of benefits of using AI

Benefits category	**Number**
Operational efficiency and effectiveness	28 (58%)
Ethics and society	11 (23%)
Decision making	7 (15%)
Environmental sustainability	2 (4%)
Total*	48 (100%)

*Some studies cited more than one benefit

The second most cited benefit belongs to the ethical and social dimension. Based on the findings, we decided to make the distinction between the organization's perspective and the beneficiaries' perspective. The former sees in AI a tool that improves the general delivery of services (Androutsopoulou *et al.,* 2019). An application is provided by Wahl *et al.* (2018) regarding how artificial intelligence can transform the provision of healthcare services to address health challenges in resource-poor settings. Other advantages include enhancing transparency and accountability (Cath *et al.,* 2018) of services. From the point of view of beneficiaries, AI is perceived to foster citizens' satisfaction with respect to services, awareness and involvement (Barth and Arnold, 1999; Kankanhalli *et al.,* 2019), as well as better collaboration and communication with entities.

AI is perceived to bring benefits to the overall decision-making processes of organizations, thanks to data-driven knowledge extraction, which improves the quality and accuracy of decisions for better governance (Anastasopoulos and Whitford, 2018; Wang *et al.*, 2010), also yielding useful insights for public sector leadership. Of course, AI-powered decision making is also extremely useful for HR practices, helping, for example to overcome human bias in decision making when screening candidates' profiles.

Lastly, environmental sustainability can be further strengthened by AI thanks to its monitoring and predictive capabilities in the mitigation of natural disasters; preservation of biodiversity; and support to waste and pollution management (Khakurel *et al.,* 2018; De Arteaga *et al.,* 2018).

Shifting the attention to the challenges when implementing AI, 57% (26) of the selected studies specifically mention them. Among those, it is worth mentioning that some studies prefer to address a specific AI-related challenge. For example, Dalenberg (2017) explores the discrimination component of AI applications in the automated online job advertising business in Europe. Other studies instead are tied to a specific dimension of AI-related challenges. This is the case of Mikhaylov *et al.* (2018), who examine the challenges of AI related to stakeholders' engagement and collaboration among public, private sector and academia. Based on the review of the literature, the main challenges associated with the adoption of AI encountered were counted and grouped into five dimensions, as shown in Table 9.

Table 9: Categorization of challenges in using AI

Challenges category	**Number**
Ethics	17 (31%)
Data and Technology	16 (30%)
Organizational setting	17 (31%)
Economics	2 (4%)
Environmental sustainability	2 (4%)
Total*	54 (100%)

*Some studies cited more than one challenge

The first observation was that studies often record challenges belonging to the ethical dimension. Within this sphere, a wide spectrum of aspects were covered. The first concerns were related to privacy and data protection, as well as the balance between privacy and data acquisition (Agarwal, 2018; Sousa *et al.*, 2019; Sun and Medaglia, 2019; Wang *et al.,* 2010). Of equal importance appear to be challenges related to decision making. In this context, studies stress the difficulty of determining who shall be responsible and accountable for decisions made

by AI (Wirtz *et al.*, 2019), and whether there is compatibility with or atrophy of human value judgement compared to machine outputs (Wirtz *et al.*, 2019; Barth and Arnold 1999); issues of political legitimacy, especially in decision making in "delicate" areas were also among the main concerns (Bullock, 2019; Wirtz and Müller, 2019). Other ethical challenges refer to discrimination and bias (Dalenberg, 2018; Kankanhalli *et al.*, 2019) as well as ensuring equal access for everybody (Corvalán, 2018).

The second most frequent dimension was data and technology. In this category there was wide variety of aspects covered, summarized as:

- Availability and accessibility, i.e., questions as to whether data for AI usage is easily available and accessible to all and for the intended purposes (Suel *et al.*, 2019). This proves to be particularly significant and problematic in developing contexts, which face greater technological constraints (De Arteaga *et al.*, 2018);
- Challenges in terms of 'interoperability' of systems reliant on different technologies (Kankanhalli *et al.*, 2019);
- Issues of 'quality, accuracy and reliability' of data (Anastasopoulos and Whitford, 2018; Androutsopoulou *et al.*, 2019);
- Understanding the so called 'black box' phenomenon (Agarwal, 2018; Corvalán, 2018: Wahl *et al.,* 2018). Indeed, it is often hard to understand how and why an AI system comes to a decision after evaluating and weighing data. This poses ethical risks of possible biases that could lead to wrong or unfair decisions by humans;
- 'Data interpretability', a component linked either to the black box phenomenon when data is difficult to discern, but also to the ability of people to understand it, and the consequent risk of misinterpretation (Burnett and Lisk, 2019).

Expertise in AI and more in general the link between AI and people will be further analysed in the next paragraph.

The organizational setting dimension sees the main AI challenges from an organizational perspective. Within this category, most of the critical points reported by the studies involve people and practices that should be addressed by HR. AI skill gaps are frequently reported in the selected articles, with staff often lacking the expertise and specialization needed (Wirtz *et al.*, 2019) to cope with AI systems. This may be one of the contributors leading to the resistance of staff in socially accepting and trusting machines. Closely linked to the above aspects is also the fear of workforce substitution and replacement by AI, and the consequent transformation and perceived destruction of jobs caused by automation (Sun and Medaglia, 2019). Therefore, apart from penetrating organizational processes, embracing AI has a clear impact on people perceptions; as we shall see, the role of HR in enabling AI transformation is to re-design and

address both the workplace and workforce experience with a view to promoting engagement, trust and innovation.

Other critical points within the organizational setting dimension refer to external relations and stakeholder engagement when it comes to aligning different environments (public, private and non-profit) in terms of interests, responsibilities and divergent approaches to managing risk, values and structures (Mikhaylov *et al.*, 2018). Lastly, less frequently addressed are the negative outcomes on the overall economy (4%) and on environmental sustainability (4%). Regarding the former, studies mention the economic risks caused by unemployment resulting from the 'substitution effect' of AI, as well as the general revenue shortfall (Agarwal, 2018). In the latter, concerns on the sustainability of AI in terms of energy consumption (Kankanhalli *et al.*, 2019), the notion of 'planned obsolescence' with reference to electronic waste, and the depletion of natural resources are seen as important negative effects of AI in the long term (Khakurel *et al.*, 2018).

4.3.2 Results of the survey and semi-structured interviews

Over a total contacted population of about 300, 123 professionals working in the public sector either as employees or as consultants responded to the survey. The outreach targeted three main communities of practice closely involved in digital transformation, including senior management advisers and 'change management' specialists, as well as human resources professionals with expertise in talent management, learning professional development, or organizational development, in addition to digitalization specialists and technology innovators. Among the three groups, the first had the most participants, with 39%, the second 25%, and the third 21%. A selected group of financial management and assurance professionals (auditing, programme evaluation) was also invited to participate based on their extensive knowledge and direct expertise on the subject.

About two thirds of the survey respondents work for the United Nations system, as shown in Table 10, conceptually segmented into UN Secretariat and subsidiary entities (UN Funds and Programmes, and UN Specialized Agencies for analysis purposes), reflecting the operational and institutional differences between these organizations. The remaining participants collaborate with European Union entities (EC, European Agencies), International Financial Institutions, or IFIs (multilateral development banks e.g., the World Bank), Public Private Partnerships (PPPs, e.g., the Global Fund) and International NGOs.

Table 10: Categorization of respondents

Respondent profile	**Total**	UN Secr.	UN Funds/ Progr	UN Spec. Ag.	Int. Fin. Instit.	PPPs, Int. NGOs	EU entities	Other entities
Change Management and/or Advisory	**48**	7	13	15	4	3	1	5
Digitalization and technological innovation	**26**	2	6	9		6		3
Financial management and assurance	**12**	1	1	5	2	2	1	
Talent management, learning & development	**31**	3	6	12		1	2	7
Other	**6**		1	2				3
Total	**123**	**13**	**27**	**43**	**6**	**12**	**4**	**18**

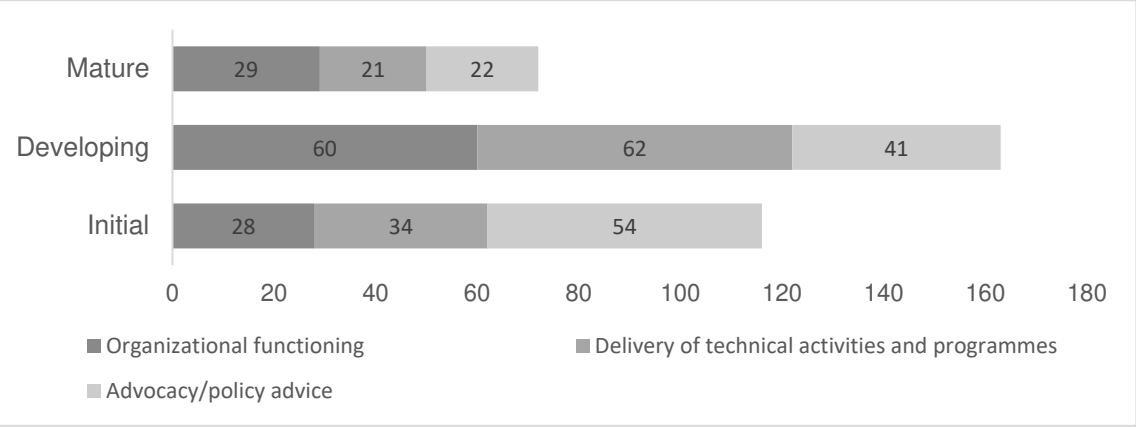
Current digitalization Maturity and Level of Ambition at Five Years

In general, the majority of respondents rate their organizations to be at the 'developing' stage when it comes to digitizing their operations and programme delivery modalities, whereas most are still in 'initial' phases of evaluating how to digitize advocacy activities and thematic influence (see Fig.11). A break-down of responses by type of organization reveals that EU institutions self-assess as being the most advanced across digitalization paths, followed by PPPs, while UN Secretariat and Specialized Agencies are among the least mature on average. When asked to express their respective organizations' level of ambition for the next five years along the three digitalization pathways (organizational functioning, delivery of technical activities and programmes, advocacy/policy advice), respondents attributed the highest absolute and percentage gains to the pathway currently most mature (organizational functioning), followed by 'delivery of technical activities and programmes'. In the latter pathway it is expected that almost no organization will still be at the initial stages by 2025, and more than half of the respondents expect to be at the 'mature' stage. Analysing the correlation between stage of maturity and level of ambition, it is possible to argue that organizations currently relatively ahead

will maintain (or increase) their lead.

This is consistent with the EOSG (2021) findings, and it represents an important indication for practitioners of organizations currently behind the curve.

Figure 11. Digitalization maturity by number of responses



Current and Future Actors of Digital Transformation

Looking at the role of different professional families in the organization, HR professionals exhibit the most significant perceived transformation of the role in the future. While 30% of respondents perceived their role as 'marginal', 45% of HR professionals consider their role to become the one of leads or co-leads over a 5-year period. In follow-up interviews, professionals elaborated on the reasons for their currently high 'marginalization': a major cause seems to be the relatively low awareness of the pervasive changes in the skillset mix, job role configuration and structural set-up needed to effectively embed digital transformation in their organizational realities. This is seen first and foremost as a 'cognitive' aspect related to the often insufficient knowledge of the business and relative 'isolation' of HR professionals in the public sector from industry communities of practice, where these topics are now mainstream.

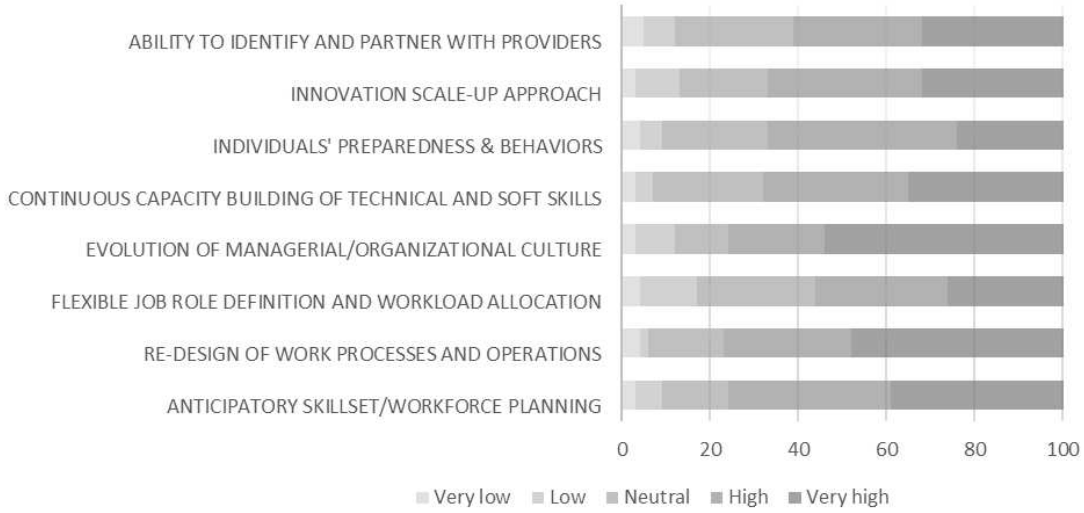
Change-management specialists and management advisors follow a very similar pattern in their expected evolution from the 'as is' to the 'to be' situation in 5 years. Interviewees from this professional family often signal the lack of integration with HR and IT professionals.

Finally, IT and digitalization experts are the ones with the relatively more stable 'positioning' predicted in 2025; more than 30% already see themselves as leads/co-leads, and less than 20% consider themselves marginalized. Based on the information gathered during interviews, the role of this professional family is linked to the evolution of the IT function from the 'service provider/purchaser' to the 'strategic business partner' model.

4.3.3 'Human-Centred' Approach to Digitalization and its Drivers

More than half of respondents partially or strongly agreed that their respective organizations are adopting a human-centred approach to digitalization, with AI emerging among the most relevant technology clusters. Only 25% of the respondents partially or strongly disagreed. The most notable differences within the overall sample can be noticed across 'sectors', with the humanitarian organizations in a leading position, followed very closely by the economic and social organizations and the peace and security organizations in a distant third position. The significant gap between humanitarian and peace and security organizations indicates that the factor driving a human-centred approach is not the presence of challenging conditions in the field (scarce connectivity, limited technical capacity of counterparts), but rather differences in organizational culture and ways of thinking across clusters of organizations.

Figure 12. Relevance of organizational preparedness variables



When looking at the potential drivers of human-centred digital transformation, the redesign of work processes and operations emerges as the most important variable, followed by the evolution of managerial and organizational culture and anticipatory skillset and workforce planning (see Fig. 12). Flexible role definition and workload allocation scores the lowest (see Fig. 12). Semi-structured interviews offered the interpretation that, because of a rather 'piecemeal' approach to digitalization in several organizations, it may still be early for some professionals to see the full extent of role adaptation and re-shuffling of workload associated with the re-definition of the boundaries between people and technology, especially in 'core' technical roles.

4.4 Recommendations: getting started with AI

As discussed in our analysis, artificial intelligence presents many opportunities for the public

sector which can be also applied to the context of international organizations. Academic literature is still scarce on developing comprehensive frameworks to understand the conditions for its full adoption. When implemented, clear benefits can be evinced in many areas of the public sphere, including in the domain of HRM. However, the findings of the present study outline some key challenges that must be taken into account so as to properly leverage the potential of AI to transform the delivery of public services. In this section, we suggest and propose some recommendations in the following critical areas: shared strategy, data management and ethical foundation, which should be at the basis of getting started with AI.

4.4.1 Shared AI Strategy

First and foremost, it is imperative to have a clear understanding of the potential, uses and scope of AI, and to ascertain how they can be integrated and matched with the objectives of the organization, while maintaining a 'human-centred' approach. In other words, the point is to find out which strategic organizational goals AI is supposed to support, and which needs it should meet. By focusing on a broader AI strategy, organizations will avoid the adoption of a 'reactive' approach wherein AI-powered techniques are used to solve specific problems—an approach that is frequently influenced by private sector efficiency gains. Instead, they will be able to act proactively to leverage its capacity to support public sector scopes, which expand to contribute to the well-being of beneficiaries.

Having shared objectives will also help the organization internally with respect to the management of people, which is currently a big issue for HR (as described in the Challenges section). A clear AI strategy will help people to understand the purpose of its implementation, thereby reinforcing trust, social acceptance and reducing the fear of workforce substitution. As argued by Duan *et al*., (2019) it is important to make staff understand that AI will be used as an augmentation tool that supports and complements their skills, rather than replacing them by automating all tasks.

However, there is another important challenge not to underestimate, namely that related to staff expertise. Building staff skills invites us to reflect that an AI strategy must be complemented with a *people* strategy that is compatible with the implementation of AI, taking into consideration the organizational digitalization preparedness and maturity. Here the role of HR comes into play with a stronger focus, since it will be up to HR to adjust and re-design the workforce and workplace in order to build the right critical AI skills and manage talents, taking advantage of the new role emerging from the survey. In this way, the broader, more 'top-down' AI overarching strategy can find solid ground in which to take root.

4.4.2 Managing Data

To respond to the challenges of data and technology, preventive actions must be taken to ensure that AI can actually work and extract meaningful information from the data the organization has access to. From the challenges reported above it evident that crucial aspects involve (i) data collection and availability; and (ii) quality of data. We saw that data is not always accessible and available for the intended purpose, and that this is a common challenge faced by developing countries. As a consequence, the amount of data is not sufficient for AI systems to operate.

However, when there is sufficient data to be processed, one of the major problems is that data is not ready and right for AI, meaning that the processing carried out by machine does not turn into meaningful information and applicable knowledge for effective decision making. To complement data gathering, fostering data quality and management must be improved, eventually supported by a governance framework that ensures correct standards and procedures.

4.4.3 Ethical Foundation

The ethical dimension received a lot of attention in the selected studies, since it is one of the major concerns AI raises. Ethical and legal issues will appear rapidly as AI differs from more traditional technologies. In this context the role of the public sector is even more key to ensuring that ethical guidance, regulations and frameworks are developed to safeguard people and beneficiaries (Duan *et al.,* 2019). Transparency, clear accountability lines and data protection must be ensured, and discrimination and biases must be addressed to avoid negative impacts on the society. It is evident that effective data management is at the core of such ethical considerations, and the above measures must be taken before any AI application is deployed. In addition, organizations must ensure that there are effective governance and oversight bodies to monitor its implementation and address complex situations.

4.4.4 Human-Centred Approach

To effectively implement a digital strategy leveraging the potential of AI while adopting a human-centred approach, it is important to consider not only the ‘digital needs’ of beneficiaries, but also the shifting roles within organizations. Even if ownership ultimately rests with line managers, HR professionals should be given the opportunity to function as business partners by triggering managers’ forward thinking, facilitating processes of identifying organizational requirements (e.g., new and emerging roles and skill-sets) and technical up- and re-skilling requirements, as well as proactive restructuring of roles and organizational entities to realign with the evolving technological and business needs. This should be accompanied by the right ‘tone from the top’

by senior management and a true commitment to drivers such as the 'growth mindset', rewarding entrepreneurship and controlled risk taking. Similarly, the emerging profile of IT departments in the public sector should also be modelled around the role of strategic business partner, able to speak the language of the sector, to analyse and interpret operational and programming needs, and to act as gatekeeper between line managers' demands and the strategic needs of the organization.

4.5 Conclusions and Limitations

The present study has presented the current state of the art of artificial intelligence focusing on the public sector context and analysing the HRM domain. Findings show that the main driving factors in the implementation of AI involve recent advancements in technology and big data; the need to reform current organizational strategies, processes, systems and people; and the imperative to ensure effective policies. The added value and promise AI can bring is first and foremost perceived in the operational efficiency and effectiveness of an organization, including great potential to re-shape the HR strategy. Benefits in ethical and social practices, data-driven decision making and environmental sustainability are also fundamental key promises for the public sector. On the other hand, opportunities are accompanied by risks and challenges, which are most evident in ensuring ethical procedures, effectively gathering and managing data, organizational management and HRM, as well as negative impacts on the economy and environment.

As we have stressed, academic literature on AI research is still in its infancy, especially as regards the public sector, and that academic studies in field of international organizations are entirely lacking. Hence, the research presented here may be hampered potential limitations, such as the exclusion of non-academic literature, which might otherwise have enriched the study in terms of further areas of application and improvement. In fact, the non-academic literature seems to be more advanced in terms of providing comprehensive frameworks on AI, especially with reference to international organizations and human-centred approaches.

References

Agarwal P.K. (2018) *Public Administration Challenges in the World of AI and Bots.* Public Administration Review*, 78*(6), pp. 917-921.

Anastasopoulos L.J., Whitford A.B. (2019) *Machine Learning for Public Administration Research, With Application to Organizational Reputation.* Journal of Public Administration Research and Theory, 29(3), pp. 491-510.

Andrews, L. (2019). *Public administration, public leadership and the construction of public value in the age of the algorithm and 'big data'*. Public Administration, 97(2), pp. 296-310.

Androutsopoulou A., Karacapilidis N., Loukis E., Charalabidis Y. (2019). *Transforming the communication between citizens and government through AI- guided chatbots*. Government Information Quarterly, 36(2), pp. 358-367.

Barth T.J., Arnold E. (1999). *Artificial Intelligence and Administrative Discretion:Implications for Public Administration.* The American Review of Public Administration, 29(4), pp. 332-351.

Bullock J. B. (2019) *Artificial Intelligence, Discretion, and Bureaucracy*. The American Review of Public Administration, 49(7), pp. 751-761.

Burnett J. R., Lisk T. C. (2019) *The Future of Employee Engagement: Real-Time Monitoring and Digital Tools for Engaging a Workforce*. International Studies of Management and Organization, 49(1), pp. 108-119.

Cath C., Wachter S., Mittelstadt B., Taddeo M., Floridi L. (2018). *Artificial Intelligence and the 'Good Society': the US, EU, and UK approach*. Science and Engineering Ethics, 24(2), pp. 505-528.

Corvalan J.G. (2018). *Digital and Intelligent Public Administration: transformations in the Era of Artificial Intelligence*. A&C-Revista De Direito Administrativo & Constitucional, 18(71), pp. 55-87.

Dalenberg D.J. (2018). *Preventing discrimination in the automated targeting of job advertisements.* Computer Law and Security Review, 34(3), pp. 615-627.

De-Arteaga M., Herlands W., Neill D.B., Dubrawski A. (2018) *Machine Learning for the Developing World.* ACM Transactions on Management Information Systems, 9(2), pp. 1-14.

Desouza K.C., Jacob B. (2014) *Big Data in the Public Sector: Lessons for Practitioners and Scholars.* Administration and Society, 49(7), pp. 1043-1064.

DiRomualdo A. (2018) *HR in the digital age: how digital technology will change HR's organization structure, processes and roles*. Strategic HR Review, 17(5), pp. 234- 242.

Duan Y.Q., Edwards J.S., Dwivedi Y.K. (2019) *Artificial intelligence for decision making in the era of Big Data - evolution, challenges and research agenda.* International Journal of Information Management, 48, pp. 63-71.

EOSG – Executive Office of the United Nations Secretary General (2021) *United Nations System Capacity Mapping 2020 – Innovation, Data and Digital Capabilities,* presented at the United Nations Innovation Network meeting of the 2nd February, 2021

Ghisleri C., Molino M., Cortese G. (2018) *Work and Organizational Psychology Looks at the Fourth Industrial Revolution: How to Support Workers and Organizations?*, Frontiers in Psychology, Nov. Vol. 9.

Hollibaugh G. E. (2018). *The Use of Text as Data Methods in Public Administration: A Review and an Application to Agency Priorities.* Journal of Public Administration Research and Theory, 29(3), pp. 474-490.

Ingrams A. (2019). *Public Values in the Age of Big Data: A Public Information Perspective. Policy and Internet*, 11(2), pp. 128-148.

Jesuthasan R. (2017) *HR's new role: rethinking and enabling digital engagement.* Strategic HR Review, 16(2), pp. 60-65.

Kankanhalli A., Charalabidis Y., Mellouli S. (2019). I*oT and AI for Smart Government: A Research Agenda.* Government Information Quarterly, 36(2), pp. 304-309.

Khakurel J., Penzenstadler B., Porras J., Knutas A., Zhang W. L. (2018). *The Rise of Artificial Intelligence under the Lens of Sustainability.* Technologies, 6(4), 18.

Kirimi J.M., Moturi C.A. (2016) *Application of Data Mining Classification in Employee Performance Prediction.* International Journal of Computer Applications, 146, pp. 28-35.

Lavertu S. (2016) *We All Need Help: "Big Data" and the Mismeasure of Public Administration*. Public Administration Review, 76(6), pp. 864-872.

Lawler J. J., Elliot R. (1996) *Artificial intelligence in HRM: An experimental study of an expert system.* Journal of Management, 22(1), pp. 85-111.

Liao Y., Deschamps F., Loures E., Ramos L. (2017) *Past, present and future of Industry 4.0 - a systematic literature review and research agenda proposal*, International Journal of Production Research, Issue 55, pp. 3609–3629.

Maciejewski M. (2016) *To do more, better, faster and more cheaply: using big data in public administration.* International Review of Administrative Sciences, 83(1_suppl), pp. 120-135.

Magnini B., Not E., Stock O., Strapparava C. (2000) *Natural language processing for transparent communication between Public Administration and citizens*. Artificial Intelligence Law, 8, pp. 1-34.

Malomo F., Sena V. (2017). *Data Intelligence for Local Government? Assessing the Benefits and Barriers to Use of Big Data in the Public Sector.* Policy & Internet, 9(1), pp. 7-27.

Mergel I., Rethemeyer R. K., Isett, K. (2016). *Big Data in Public Affairs.* Public Administration Review, 76(6), pp. 928-937.

Mikhaylov S. J., Esteve M., Campion, A. (2018) *Artificial intelligence for the public sector: Opportunities and challenges of cross-sector collaboration.* Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences, 376(2128).

Morkhat P. M., Ponkin I. V., Markhgeym M. V., Botnev V. K., Turganbayev, A.O. (2019). *Artificial intelligence versus public administration: Limitations of application.* Humanities and Social Sciences Reviews, 7(3), pp. 516-520.

Muhammad Masum A. K., Beh L.-S., Azad M.A.K., Hoque K. (2018). *Intelligent human resource information system (i-HRIS): A holistic decision support framework for HR excellence*. International Arab Journal of Information Technology, 15, pp. 121-130.

Pandey S., Pandey S.K., Miller L. (2016) *Measuring Innovativeness of Public Organizations: Using Natural Language Processing Techniques in Computer- Aided Textual Analysis*. International Public Management Journal, 20(1), pp. 78- 107.

Poel M., Meyer E. T., Schroeder R. (2018). *Big Data for Policymaking: Great Expectations, but with Limited Progress?* Policy & Internet, 10(3), pp. 347-367.

Rab-Kettler K., Lehnervp B. (2019) *Recruitment in the Times of Machine Learning.* Management Systems in Production Engineering, 27(2), pp. 105-109.

Saidi Mehrabad M., Fathian Brojeny M. (2007) *The development of an expert system for effective selection and appointment of the jobs applicants in human resource management.* Computers and Industrial Engineering, 53(2), pp. 306-312.

Simões R. V., Parreiras M.V.C., Silva A.C.C.D., Barbosa C. E., Lima Y. O. d., Souza, J. M. d. (2022) *Artificial Intelligence and Digital Transformation: Analyzing Future Trends,* IEEE International Conference on Systems, Man, and Cybernetics (SMC), Prague, Czech Republic, 2022, pp. 1462-1467.

Sousa W.G.d., Melo E.R.P.d., Bermejo, P.H.D.S., Farias, R.A.S., Gomes, A.O. (2019). *How and where is artificial intelligence in the public sector going? A literature review and research agenda.* Government Information Quarterly, 101392.

Storey Hooper R., Galvin T. P., Kilmer R. A., Liebowitz J. (1998). *Use of an expert system in a personnel selection. Expert Systems with Applications*, 14(4), pp. 425-432.

Strohmeier S., Piazza F. (2015) *Artificial Intelligence Techniques in Human Resource Management—A Conceptual Exploration*. In: Kahraman C., Çevik Onar S. (eds) Intelligent Techniques in Engineering Management. Intelligent Systems Reference Library, vol 87, pp-149-172

Suel E., Polak J.W., Bennett, J.E., Ezzati M. (2019) *Measuring social, environmental and health inequalities using deep learning and street imagery*. Scientific Reports, 9(1), 6229.

Sun T. Q., Medaglia R. (2019) *Mapping the challenges of Artificial Intelligence in the public sector: Evidence from public healthcare*. Government Information Quarterly, 36(2), pp. 368-383.

Tambe P., Cappelli P., Yakubovich V. (2019) Artificial intelligence in human resources management: Challenges and A path forward. California Management Review, 61(4), pp. 15-42.

Taylor L., Cowls J., Schroeder R., Meyer E.T. (2014) *Big Data and Positive Change in the Developing World*. Policy & Internet, 6(4), pp. 418-444.

Upadhyay A., Khandelwal K. (2018). *Applying artificial intelligence: implications for recruitment*. Strategic HR Review., 17 (5), pp. 255-258.

van Esch P., Black J. S., Ferolie, J. (2019) *Marketing AI recruitment: The next phase in job application and selection.* Computers in Human Behavior, 90, pp. 215-222.

Vial G. (2019) *Understanding digital transformation: a review and research agenda*, The Journal of Strategic Information Systems, Issue 2, pp. 118-144.

Wahl B., Cossy-Gantner A., Germann S., Schwalbe, N.R. (2018) *Artificial intelligence (AI) and global health: how can AI contribute to health in resource- poor settings?* BMJ Global Health, 3(4), pp. 1-7.

Wang Z., Yan R., Chen Q., Xing R. (2010). *Data Mining in Nonprofit Organizations, Government Agencies, and Other Institutions.* International Journal of Information Systems in the Service Sector, 2(3), pp. 42-52.

Wirtz B.W., Müller W.M. (2019) *An integrated artificial intelligence framework for public management.* Public Management Review, 21(7), pp. 1076-1100.

Wirtz B.W., Weyerer J.C., Geyer C. (2019) *Artificial Intelligence and the Public Sector—Applications and Challenges.* International Journal of Public Administration, 42(7), pp. 596-615.

5. Conclusions

5.1 Overview

The intersection of supply chain management, the adoption of cash and vouchers, and the ongoing shift toward human-centric digital transformation, particularly with the infusion of AI, presents a dynamic landscape for academic research focusing on the public sector and, in particular, international organizations. Simultaneously, the evolving nature of these domains is not only reshaping operational strategies but also introducing new opportunities and challenges to be explored.

The first part of this research (Section 2) served the primary objective of establishing a robust foundational understanding of humanitarian supply-chain management. By delving into the components, roles, and critical success factors, the study provides a broad overview necessary for effective decision making in humanitarian contexts. Aligned with the research objective, the study introduces a maturity framework for humanitarian supply chains, offering insightful perspectives into varying levels of maturity. It highlights strategic approaches for heightened agility (the ability to respond effectively to unpredictable demand and changes in the disaster environment), leanness (achieving cost-efficiency by doing more with less), and reliability (ensuring quality and safety throughout the supply chain). The research also outlines a preliminary exploration into the impacts of emerging trends, specifically the adoption of CVA, highlighting the potential transformative impact of CVA on humanitarian operations.

Section 3 investigated the integration of Cash and Voucher Assistance (CVA) within humanitarian entities, with a specific focus on the case of the World Food Programme (WFP). It analysed associated benefits, risks, and implications of CVA. The research suggests a revised McKinsey 7-S Model tailored to the distinctive operational characteristics of humanitarian organizations, highlighting some key organizational characteristics needed to successfully implement CVA. These include: (i) building robust organizational capacity supported by substantial investments in staff training and strategic recruitment; (ii) focusing on skillset adaptation, potentially phasing out traditional roles; (iii) reducing fragmentation and investing in inter-cluster coordination; and (iv) finding a good balance between centralization and decentralization tensions. As the research suggested, despite their limitations and potential pitfalls, cash and voucher schemes can represent an alternative to traditional aid, providing greater flexibility and efficiency, as well as giving beneficiaries more choices and dignity in their purchasing decisions.

Lastly, in line with the need to focus on skillset adaptation and given the greater attention towards integrating emerging technologies not only limited to specific areas of organizations such as tech-based supply-chain management (e.g., machine learning and data analytics to

predict disasters) or CVA programmes (e.g., the use of AI-based eye-scan technologies to provide access to CVA to beneficiaries), the last part of the research (Section 4) explored the implications of emerging technologies within IOs. The analysis focused particularly on AI and how this can influence operational efficiency, decision-making processes, and the overall HR service landscape in the IOs. Based on the literature review, it seems that most studies (70%) highlight the benefits of AI adoption, predominantly in the areas of operational efficiency (58%), ethics and society (23%), and decision-making (15%), with a lesser focus on environmental sustainability (4%). At the same time, 57% of studies identify concerns with ethics (31%), data and technology (30%), and organizational setting (31%). These results reflect the multifaceted landscape of AI adoption, highlighting the need for a comprehensive approach to harness its potential while mitigating associated challenges. The research not only acknowledges the benefits and challenges associated with AI adoption, but also substantiates the need to advocate for a 'human-centred' approach to digital transformation. Findings from the survey suggest that organizations, especially in the public sector, are in the developing stages of digitizing their operations and programme delivery. Hence, to effectively harness the potential of AI and emerging technologies, the need emerges for a proactive approach to reshape roles and structures within organizations. In practical terms, this means identifying emerging roles and skillsets required for AI implementation, fostering a culture of continuous learning and adaptation, and ensuring that HR practices align with the overall strategic goals of the organization. As a result, and as confirmed by survey responses (45% of respondents expected the HR function to move into lead or co-lead positions), HR management will be characterized by a substantial transformation in its role. This is not limited to the need of the HR community to address emerging challenges, but also involves seizing opportunities. Hence, the recommendation for a ‘human-centred’ approach aligns with the idea that HR can lead in redesigning the workforce and workplace experience to promote engagement, trust and innovation. This will entail not only managing the implementation of AI but also ensuring that the workforce is equipped with the necessary skills, as well as addressing concerns about job displacement, and fostering a culture that embraces technological advancements. This transformation positions HR as a key driver of organizational success in the dynamic landscape of emerging technologies.

5.2 Contribution to practice and academic knowledge

Looking at the implications stemming from this research, it is possible to argue that Section 2 provides a foundational understanding, offering insights on supply-chain management to support informed decision-making in the dynamic humanitarian landscape. The introduced maturity framework serves both the practitioner community as a strategic guide, enabling

organizations to assess and enhance the maturity levels of their supply chains, fostering adaptability and efficiency, as well as academics, providing a basis for further exploration and refinement in understanding the maturity levels of humanitarian supply chains. Additionally, by recognizing the complementarity of agility, leanness, and reliability in the 'supply chain triangle', organizations can optimize operations across different disaster response phases.

Section 3 of the dissertation further contributes to the ‘supply chain triangle’ by exploring the impact of the integration of CVA. From a practitioner’s perspective, the research emphasizes the need to prioritize substantial investments in organizational capacity building. Organizations should carefully navigate this transition, recognizing the need for both continuity and change in their workforce. Additionally, the research suggests that organizations, particularly those with mature CVA capabilities like the World Food Programme, should strategically position themselves to lead in the evolving landscape, potentially taking on leadership roles in system-wide initiatives. The exploration of potential system-wide infrastructure for CVA also introduces a novel perspective to academic discourse with a particular focus on the evolution of humanitarian assistance.

Lastly, focusing on Section 4, the research addresses the gap in academic literature, providing an overview of the opportunities and challenges posed by AI adoption in the context of IOs. The emphasis on a 'human-centred' approach aligns with contemporary discussions on responsible AI implementation, ensuring that the integration of technology considers its impact on the workforce and organizational culture. The research contributes not only to the theoretical discourse, but also to the practical considerations in the ongoing digital transformation within IOs. In particular, the survey responses, reflecting the perspectives of professionals in the public sector, further enrich the academic understanding by providing real-world insights into the current digitalization maturity, ambitions, and perceived transformations of roles within organizations. The identified recommendations serve as a guide for organizations looking to embark on the AI journey, emphasizing the importance of strategic planning, ethical considerations, and the central role of HR in navigating the transformative landscape.

5.3 Limitations and Future Research Agenda

While the study provides valuable insights, several limitations should be borne in mind. Looking at Section 2, the findings and frameworks formulated may encounter challenges in terms of generalizability across diverse humanitarian contexts. Given the substantial variations inherent in humanitarian operations, the study may not comprehensively encapsulate the intricacies of every scenario. Furthermore, the proposed maturity framework necessitates further empirical validation to ascertain its applicability and efficacy across a spectrum of humanitarian situations.

Moving the attention to Section 3, the absence of comprehensive academic studies on international organizations limits the depth of analysis on CVA from both a qualitative and quantitative perspective. More research is needed to capture the full scope of CVA, its implications on transforming humanitarian programmes, and to predict with greater certainty the direction humanitarian organizations will take in the future. This need for additional research is emphasized by the fact that the study predominantly relies on the experiences and practices of the World Food Programme (WFP), thereby limiting the generalizability of findings across diverse humanitarian organizations with different structures, capacities, and approaches to CVA.

Lastly, this research stressed the relevance of a human-centric approach when adopting AI in IOs. Nevertheless, AI research is characterized by a dearth of studies on the areas mostly targeted by international organizations, namely Africa, Asia, and Latin America. The topic is only recently gaining increased attention in academic circles but showing exponential growth, with 65% of available articles having published in the last few years. Additionally, as an area presently undergoing intensive investigation and continuous development, the findings may not be entirely generalizable to other organizations with disparate structures, cultures, and operational contexts. The state-of-the-art applications and challenges discussed may also be time-sensitive. Lastly, while the study emphasizes the importance of a 'human-centred' approach, it does not delve deeply into the challenges associated with implementing such an approach. Conducting longitudinal studies to track the evolution of AI adoption in IOs over time could enable researchers to observe changes in HR practices, organizational culture, and the overall impact of AI on the workforce.