KNOWLEDGE INTO ACTION FORUM

ENGAGEMENT WORKSHOP FORM

TITLE: BIG DATA ANALYTICS FOR SUSTAINABLE SUPPLY CHAINS

1. Central Theme

Information and information management is considered to be of high importance in Sustainable Supply Chain Management (SSCM). Supply chain performance is often reduced by a lack of information but can also be negatively impacted by too much information. On the one side, sensitive data is not provided to all supply chain members. On the other side, information from various sources, such as sensors in production facilities, messages between business partners, but also social media and other news threaten to overload information processing systems of an organization. This phenomenon of coincidental lack and abundance of information can lead to information gaps and information distortion. Big Data Analytics (BDA) has been proposed as a means for information management to identify important information and to filter and analyze multiple sources and types of information at the same time. This project aims to develop BDA support of SSCM.

2. Going Beyond the State of the Art

Although Big Data Analytics has been proposed recently for Supply Chain Management (SCM), empirical research on the implementation and impact of Big Data Analytics is still scarce. This gap is even bigger for sustainability applications. By developing a conceptual model for Big Data Analytics in SSCM and empirically evaluating this theoretical model the project will create an important contribution to research and practice alike.

Although supply chain management has become an established field in research and practice, research is usually restricted to the focal or other singular companies in the supply chain. Interactions between supply chain actors are rarely considered. This project aims at addressing this gap by including partners of a whole supply chain, ideally spanning several countries in- and outside Europe.

3. *Objectives*

The project aims to apply methods from BDA to a sustainable supply chain setting in order to investigate information needs and information processing to foster sustainability in the supply chain. It aims to investigate multiple stages of a whole supply chain, i.e. all suppliers, a focal company and retailers, spanning several countries. This way information needs and information distortion effects throughout the supply chain can be identified. By analyzing information processing to enhance sustainability performance, possibilities and practical examples for BDA will be investigated in detail.

In a first step the relevant literature will be analyzed to identify information needs for the individual stages of the supply chain, and to investigate the link between BDA and SSCM. Based on this, a

conceptual model integrating BDA into SSCM will be developed. This model will be evaluated through interviews with practitioners on the different steps of the supply chain. This project stage will also cover information distortion by comparing comprehensiveness and content of information exchanged. Project partners have yet to be identified.

4. Anticipated value and impact

The project will provide insights on how companies and organizations are coping and can better cope with the rising volume and diversity of information to maintain competitiveness and to enhance sustainability. At the same time, the project aims at improving transparency in a supply chain, which depends on the quality and adequacy of the information shared and managed in the supply chain, especially for sustainability.

Since empirical research on Big Data Analytics is still scarce, the project will have relevant benefits for both practitioners and researchers, as the empirical data will allow for insights into the so far theoretically and conceptually driven discussion. The project will provide a precise overview of shared information, information perception throughout a supply chain. The related impacts on information management are of special interest to practitioners, as information management is related to high performance and is viewed as a source of competitive advantage. Additionally, the project will shed new light on enhancing the sustainability performance of a supply chain.

5. Funding Scheme

The preferred source of funding is the EU with multiple partners both in the university and practice. The lead applicant is currently looking for partner universities outside of the country of origin, which ABIS could be an excellent platform to find such partner universities with similar research interests. The lead applicant will contribute the majority of the required text for the intended proposal, including the involvement in several work packages, but we are open to the offered suggestions from future acquired research partners.

6. General Theme (Choose at least one)

☐ Education	☒ Research	☐ Training

KEYWORDS

☐Social entrepreneurship	☐Sustainable Development
☐Human Right	☐Training, Research
☐Health	☒Corporate Strategy
☒Sustainability	☐Development
☐Innovation	☐Environmental Sustainability
☐Technology	☐SMEs
☐Life Style, Sociology	☐Strategy
☒Management	☐Competitiveness
☐Entrepreneurship	☐Consumer Behavior
☐Leadership	☐Corporate Responsibility
☐Cross-sector and Society Collaboration	☐Developing Countries
☐Corporate Social Responsibility	☐Finance
☐Ethics, Human Resources	☐Circular Economy,
☐Business Model	☐Smart Cities,
☐Social Responsibility	☐Water,
	☒Big Data

7. Administrative information:

Information of Person Submitting the Project idea

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ICT-14-2016-2017: Big Data PPP: cross-sectorial and cross-lingual data integration and experimentation

Specific Challenge: Europe lacks a systematic transfer of knowledge and technology across different sectors and there is an underdeveloped data sharing and linking culture. Traditionally, data has been collected and used for a certain purpose within sectorial "silos", while using data across sectors for offering new services opens new opportunities for solving business and societal challenges. The lack of agreed standards and formats, and the low rates of publishing data assets in machine discoverable formats further hold back data integration. The fact that textual data appears in many languages creates an additional challenge for sharing and linking such data. Finally, there is a lack in Europe of secure environments where researchers and SMEs can test innovative services and product ideas based on open data and business data.

The challenge is to break these barriers and to foster exchange, linking and re-use, as well as to integrate data assets from multiple sectors and across languages and formats. A more specific challenge is to create a stimulating, encouraging and safe environment for experiments where not only data assets but also knowledge and technologies can be shared.

Scope: Proposals should cover one of the following bullets:

a. Data integration activities will address data challenges in cross-domain setups, where similar contributions of data assets will be required by groups of EU industries that are arranged along data value chains (i.e. such that the value extracted by a company in a given industrial sector is greatly increased by the availability and reuse of data produced by other companies in different industrial sectors). The actions will cover the range from informal collaboration to formal specification of standards and will include (but not be limited to) the operation of shared systems of entity identifiers (so that data about the

same entity could be easily assembled from different sources), the definition of agreed data models (so that two companies carrying out the same basic activity would produce data organised in the same way, to the benefit of developers of data analytics tools), support for multilingual data management, data brokerage schemes and the definition of agreed processes to ensure data quality and the protection of commercial confidentiality and personal data. The actions are encouraged to make use of existing data infrastructures and platforms.

b. Data experimentation incubators should address big data experimentation in a cross-sectorial, cross lingual and/or cross-border setup. This setup should include access to data in different domains and languages, appropriate computational infrastructure, and open software tools. The incubator should make these available to the experimenters, who are expected to be mainly SMEs, web entrepreneurs and start-ups. Experimentation is to be conducted on horizontal/vertical contributed data pools provided by the incubator. At least half of the experiments should address challenges of industrial importance jointly defined by the data providers, where quantitative performance targets are defined beforehand and results measured against them. Effective cross-sector and cross-border exchange and re-use of data are key elements in the experiments ecosystem supported by the incubators. Therefore, the incubators are expected to address the technical, linguistic, legal, organisational, and IPR issues, and provide a supported environment for running the experiments. To remain flexible on which experiments are carried out and to allow for a fast turn-over of data experimentation activities, the action may involve financial support to third parties, in line with the conditions set out in part K of the General Annexes. The proposal will define the selection process of the
experimenters running the data activities for which financial support will be granted (typically in the order of EUR 50 000 – 100 000[15] per party). At least 70% of the EU funding shall be allocated to this purpose. Experiments are expected to run for a maximum of 6 months, while the incubator should run for a minimum of three years. The proposals are expected to explain how the incubator would become self-sustaining by the end of the funded duration of action.[16]

The Commission considers that proposals requesting a contribution from the EU of between EUR 1 and 3 million (for the data integration activities under a) or about EUR 7 million (for the incubators under b) would allow this area to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

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15 In line with Article 23 (7) of the Rules for Participation the amounts referred to in Article 137 of the Financial Regulation may be exceeded, and if this is the case proposals should explain why this is necessary to achieve the objectives of the action.

16 It is recommended to also use established networks reaching out to SMEs like the Enterprise Europe Network and the NCP network for calls publications and awareness raising towards SME's.

Expected Impact:

a. Data integration activities

- Data integration activities will simplify data analytics carried out over datasets independently produced by different companies and shorten time to market for new products and services;
- Substantial increase in the number and size of data sets processed and integrated by the data integration activities;
- Substantial increase in the number of competitive services provided for integrating data across sectors;
- Increase in revenue by 20% (by 2020) generated by European data companies through selling integrated data and data integration services offered.

b. Data experimentation incubators

- At least 100 SMEs and web entrepreneurs, including start-ups, participate in data experimentation incubators;
- 30% annual increase in the number of Big Data Value use cases supported by the data experimentation incubators;
- Substantial increase in the total amount of data made available in the data experimentation incubators including closed data;
- Emergence of innovative incubator concepts and business models that allow the incubator to continue operations past the end of the funded duration.

Type of Action: Innovation action