D&C for EU Funded Projects: Towards an Integrated Omnichannel Dissemination and Communication Framework

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Abstract
In an ever-changing environment, technological progress is at the frontline. Through European-funded projects, research is conducted in various fields, aiming to tackle Europe's biggest challenges in various sectors. In the course of materializing these new advancements, exploitable outcomes are designed and developed that, in turn, need to be optimally introduced to the market. In order for that to happen, the first thing needed is to make the developments widely known so that they start the journey of diffusion toward adoption, for which Dissemination and Communication is key. However, Dissemination and Communication actions are quite often underperforming. This research proposes a new approach to Dissemination and Communication actions by introducing an Integrated Omnichannel Dissemination and Communication (IODC) Framework relying upon Integrated Communications, capitalizing on and Omnichannel approach to optimally address all potentially interested stakeholders (through the Quintuple helix) that can help European Funded projects' partners effectively structure their Dissemination and Communication strategy and actions.

Keywords: *Dissemination, Communication, Integrated, Omnichannel, Funded Projects*

Introduction

European Union is leading the way for sustainable growth with the new Circular Economy Action Plan (CEAP) (European Commission, 2020). In this framework, the EU has been actively promoting and implementing initiatives for transitioning to a circular economy, with specific aims such as reducing waste, increasing resource efficiency and creating economic, environmental and social benefits. Some key initiatives (as materialized through funded projects) for sustainable production processes and sustainable products can be found in EUs funding projects such as PLOOTO (European Commission, 2023). These efforts and outputs will enable the transition towards circularity for the industry/workers/ people/ regions and cities. Ultimately, it empowers production and consumption to move towards a new circular future. However, for results to be communicated and disseminated properly, thus multiplying their outreach and lessening their adoption time, Dissemination and Communications (D&C) actions are necessary to be conducted appropriately and in a structured manner. This research aims to support this direction by introducing an Integrated Omnichannel Dissemination and Communication Framework [IODC]. Its building blocks will be validated in the context of the PLOOTO EU-funded project on circularity.

PLOOTO is a European Union (EU) funded project under the HORIZON EUROPE main program, aiming to deliver a Circular and Resilient Information System (CRIS) to support manufacturers in their green, digital and circular transition. Following these directions, as has been set in the research and innovation activities of the program, aligned with relevant EU-funded programs, Dissemination and Communication (D&C) has a prominent and essential role in the well-ordered outreach activities of the project. With this being the case, the present research aims to set an initial D&C project strategy abiding to an Integrated Omnichannel D&C Framework based on the existing bibliography of Integrated Marketing Communications and Omnichannel Communications and instantiated with prior studies on environmental marketing (accounting for the overall context of the project).

Dissemination and communication

The importance of D&C
Dissemination and communication are essential components of EU-funded programs, as they are tasked with the critical role to ensure that the results of these programs are effectively shared with all interested stakeholders (e.g. Academia and Industry) and utilized (medium towards exploitation of produced Key Exploitable Outcomes (KERs). The EU program "Science with and for society" (Commission et al., 2020), part of the EU Research and Innovation program Horizon2020, precisely serves this purpose. Through the formulation of core values, "Science with and for society" emphasizes the importance of the role of dissemination and communication in science education, promoting open access to research outputs and setting as a priority the engagement of citizens across the European Commission, is aiming to "effectively build cooperation between science and society". Campos & Codina (2021) underline the necessity of planning the communication strategy from the early stages, to effectively answer questions such as what the project is, what is the purpose of the project, the impact etc. as well as the day-to-day operations towards

materializing its diffusion goals. Additionally, as part of the FP7 European project SOPHIE, Marín-González et al. (2017) stressed the importance of dissemination and communication in research projects by calling attention to the effectiveness of D&C.

The importance of the activities of dissemination and communication can be comprehended in terms of their purpose and the key benefits they provide. Specifically, D&C enhances the impact and reach of the program. Communicating the results and outcomes of a funded program to a broader audience increases the impact of the program and widens the audience who can benefit from the knowledge and resources generated. Tripathy et al. (2017) listed 10 approaches that can lead to an improved visibility and dissemination for policy makers and practitioners. Part of this list emphasizes on the effective use of social media, sharing research outputs in different formats other than manuscripts, such as SlideShare and FigShare, disseminating through personal blogs, carefully selecting the title and keywords and embracing open science practices, among others. In addition to the previous tips, Ross-Hellauer et al. (2020) – focusing mainly on digital communication vehicles – set out their own rules for successful and innovative dissemination of research. Plenty of their rules are consistent with those proposed by Tripathy et al., (2017). From the ten steps the authors proposed, we found similarities in the media format selection, the open science impact, dissemination through personal blogs and others. Although previous efforts have presented general guidelines and tips on how to effectively conduct D&C activities and strategies (Kaur & Nikander, 2017; Ross-Hellauer et al., 2020; Tripathy et al., 2017), an overall methodology and framework is yet to be produced, and research has highlighted its necessity in line of presenting the need for D&C actions that have unified messages and approach different stakeholders (Coyne et al., 2022; Elwy et al., 2022; Goodman & Sanders Thompson, 2017). The first step in this direction is to examine the way the D&C messages are created in a coherent and uniform manner across potential channels, paving the way for the need of Integrated D&C.

Environmental dissemination and communication

The importance of successfully managing communications in an environmental project across stakeholders is vital for the development and implementation of the project (Khrutba et al., 2021). Since the beginning of 2000, the European Commission has made efforts to improve communications between environmental scientists and policy-makers (Danielopol et al., 2006) as one of the main stakeholders in environmental D&C. In this direction, Hansen (2011) highlighted the necessity for integrated communication research on environmental issues on the so-called "three foci of environmental communication research": the construction of media messages, the content of the messages and the impact of such messages. To address this framework, environmental researchers should disseminate research findings from traditional and online media to engage more actively with different stakeholders (Wilkinson & Weitkamp, 2013). Gravina et al. (2017) study on social networks and environmental research communication, suggest that users' interest can be stimulated from regular updates on the website and that web-mediated scientific dissemination can be enhanced with a more direct involvement of the researchers.

Integrated Dissemination and Communication

Since the beginning of its conception, Integrated Marketing Communications (IMC) has become a powerful tool in the hands of marketing practitioners. Despite the seminal academic research that has been produced in the last decades (J. Kliatchko, 2009), a widely accepted and standard definition in terms of issues (J. Kliatchko, 2005) and scope (Finne & Grönroos, 2017) has not yet been defined. Nevertheless, for the purpose of this research, we approach Integrated Marketing Communications as "an audience-driven business process of strategically managing stakeholders, content, channels, and results of brand communication programs" (J. G. Kliatchko, 2008, p.140). Although previous research (Campos & Codina, 2021) has highlighted the need to plan D&C activities, a detailed approach on how this plan can be formulated is yet to be designed and evaluated, leaving ample room for it, aligned with the overall purpose of the project itself. In order to ensure that all project partners, all development efforts and all Key Exploitable Results (KERs) are eventually coordinated and adhere to each project's vision, a uniform dissemination and communication should be planned. To aid us in that direction we draw from the literature certain principles of Integrated Marketing Communications to assist us in formulating a first step towards Integration of D&C planning. Specifically, Harrison & Jackson (2013), in their research on business practices by food and beverage companies, synthesize from the academic literature the main characteristics- principles of Integrated Marketing Communications presented in Table 1.

Themes	Source	Characteristics - Principles
Integrated Marketing Communication	Harrison & Jackson, (2013)	♦ Affect behaviour through communication ♦ Consistency of communication and its elements ♦ Consumer as crucial focus ♦ Establish and grow a brand-consumer relationship ♦ Engages target consumers in co-creation ♦ Leverages subtlety ♦ Engages with target customers using multiple channels

Table 1. IMC principles

Following the Harrison & Jackson (2013) approach (Table 1), we propose introducing the base principles of Integrated Marketing Communications to the Dissemination and Communication of EU Projects. This leads to an Integrated Dissemination and Communication Plan where the consumer (i.e., different stakeholders) stands in the center and she/he is utilized in the co-creation of messages where all produced communication and elements are consistent among them. Specifically, in EU-funded projects all messages should be made initially to be consistent with the overall project vision and more importantly with the targeted recipients into consideration. However, the recipients are of vastly different types (e.g., Academia vs Industry vs Government) leading to the need for further adaptation of the messages. In that direction of segmentation and horizontal coverage of all possible types of D&C activities' categories of recipients, we can utilize the "Quintuple Helix" model derived from the "Triple Helix" model (Carayannis et al., 2012) towards building the integrated messages.

The "Triple Helix" model has been used for several decades to describe the relationship between academia, government, and industry in the context of innovation (Meyer et al., 2014). Recently, a new model has been proposed that builds upon the Triple Helix model and includes two additional stakeholders: civil society and the natural environment (Fig.1). This expanded model, known as the "Quintuple Helix" model, has gained significant attention among scholars, policy-makers, and business leaders (Carayannis et al., 2012). The Quintuple Helix model acknowledges the importance of not only the three traditional stakeholders of academia, government, and industry but also the role of civil society and natural environment in fostering sustainable innovation. The model recognizes that innovation and economic development are not isolated from the larger social and environmental systems in which they operate (Carayannis et al., 2018).

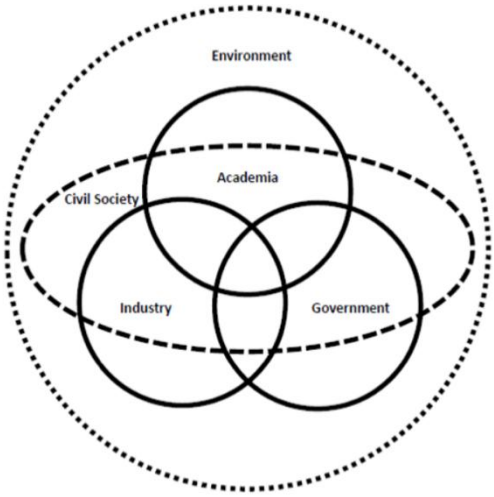

Figure 1. Five Helices of the Quintuple Helix (Carayannis et al., 2012)

Academia stands as a critical stakeholder in the Quintuple Helix model (Grundel & Dahlström, 2016). Universities are vital in generating new knowledge and ideas that can lead to innovations (Huang & Chen, 2017). Additionally, academic institutions can help educate the next generation of innovators and entrepreneurs, creating a pipeline of talent that can contribute to economic growth (Morawska-Jancelewicz, 2022; Volkmann et al., 2009). Government role stands highly in importance as a stakeholder in the Quintuple Helix model as it can provide funding and policy support for innovation initiatives. Part of those initiatives is to create an enabling environment for innovation by providing infrastructure and support for research and development (Mahfuz Ashraf et al., 2019). The industry is the third traditional stakeholder in the Quintuple Helix model. Businesses are critical in translating research and ideas into products and services that can be brought to market. Additionally, they can provide funding for research and development and help identify new markets and opportunities for innovation (Etzkowitz, 2003). Civil society, as the fourth stakeholder in the Quintuple Helix model, encompasses a range of non-governmental organizations, community groups, and social enterprises that can help to create a more inclusive and sustainable innovation ecosystem (Yoon et al., 2017). These organizations can bring new perspectives and ideas and help identify and address social and environmental issues often overlooked in traditional innovation models. The natural environment is the final stakeholder in the Quintuple Helix model. This stakeholder recognizes the natural world's critical role in providing the resources and ecological services that underpin economic and social activity (Barcellos-Paula et al., 2021). All the aforementioned types of potential D&C recipients need to be accounted for in the course of the D&C efforts. As they have different needs and can utilize project results differently, a need emerges to have D&C activities for all five types and in parallel have the messages customized for each one whilst maintaining an alignment to the project vision. Having an integrated message abiding for all potential stakeholders, we need to examine the potential to reach them across all possible outlets. In that direction, practices from the field of Omnichannel communications can lend support.

Omnichannel Dissemination and Communication

Current D&C practices in European Funded projects include utilising online and offline approaches in the course to actively engage each project's target audiences. Most commonly used channels include: (a) Online: Website, Social Media (LinkedIn, Facebook, Twitter, YouTube etc.), e-Mail Newsletter, White Papers, Open Repositories, Online Training Material, Journal and Conferences submission/participation, Webinars etc. and (b) Offline: Press Releases, TV, Radio, Conferences, Workshops, Multi-(Bi-) lateral discussions/presentations etc.

The use of channels and technologies for D&C currently is determined by each project's target audience and is driven by the resources and capabilities of the projects' participants. However, as the goal of D&C is maximizing the outreach

potential and not all projects utilize all available mediums in their efforts (Lorés, 2020; Mea et al., 2016), the industry currently is operating at best on a multi-channel modal of D&C activities. Nevertheless, other fields (e.g., retailing) have developed far more advanced methods of interacting with their target recipients driven by the rapid changes in the technological landscape in marketing communications. In particular, Omnichannel Marketing is a relatively new field (Verhoef et al., 2015) that Cui et al. (2021) defines "as the synergistic management of all customer touchpoints and channels both internal and external to the firm to ensure that the customer experience across channels as well as firm-side marketing activity, including marketing-mix and marketing communication (owned, paid, and earned), is optimized for both firms and their customers" (pp. 104). In Omnichannel Marketing, several principles and characteristics can benefit the current modal of operation of D&C activities in EU projects as Table 2 presents.

Themes	Source	Characteristics - Principles
Omnichannel Business	Lehrer & Trenz, (2022)	♦ Seamless transition between channels within the same transaction ♦ Consistent customer experience across channels ♦ Coordinated and management of channels ♦ Knowledge sharing across channels ♦ Directed towards minimizing channel competition and maximizing channel synergies ♦ Integrated across channels

Table 2. Principles of omnichannel communication

Following this perspective, we propose introducing the base principles of Omnichannel marketing to the Dissemination and Communication of EU Projects, leading to an Omnichannel Dissemination and Communication Plan where all possible channels are examined and utilized in unison to maximize the potential of outreach of EU funded projects.

Towards a Framework of Integrated Omnichannel Dissemination and Communication (IODC)

Having identified the vast benefits of integrated marketing for all stakeholders (accounted by the quintuple helix) and omnichannel marketing, we propose an Integrated Omnichannel Dissemination and Communication (IODC) Framework as illustrated in Figure 2. The IODC Framework is developed to account for the need to mitigate the difficulties in synergies creation across channels and integrate customers' messages, touchpoints and interactions as identified by Manser Payne et al. (2017) for European Funded projects.

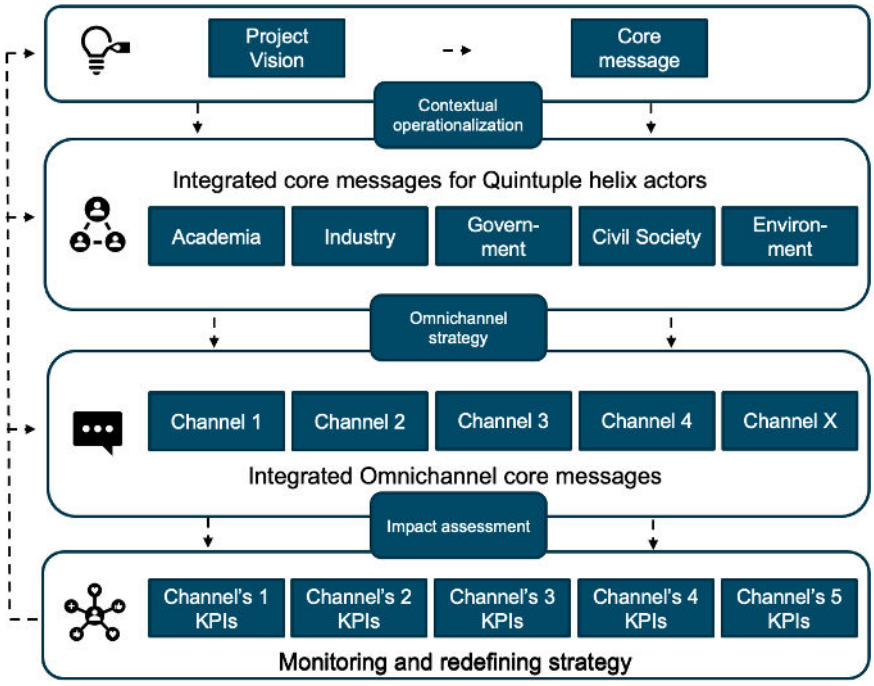

Figure 2. The Integrated Omnichannel Dissemination and Communication (IODC) Framework

Table 3 provides a comprehensive view for developing and evaluating a project's integrated omnichannel dissemination and communication strategy, with specific KPIs for each level. The matrix is structured into six levels, each focusing on a different aspect of the framework. The first level is the Core Message, which is the foundation of the communication strategy. It aims to develop a clear and concise message consistent across all channels and adapted to each stakeholder in the Quintuple Helix model while maintaining alignment with the research project vision. The second level is

Contextual Relevance, which ensures that the messages are relevant and meaningful in the broader social, environmental, and economic context in which the research project occurs. The third level is Stakeholder Adaptation, which tailors the message to the interests and be appropriate for each stakeholder in the Quintuple Helix model. The fourth level is Communication Channels, identifying each stakeholder's most effective communication channels in order to reach the intended audience and engaging with them effectively. The fifth level is the Omnichannel Approach, which uses an integrated approach to distribute messages across multiple platforms and touchpoints, ensuring the message is consistent across all platforms and reaches the intended audience in various contexts. The final level is Impact Assessment, which monitors and evaluates the impact of the communication strategy, using metrics such as website traffic, social media engagement, media coverage, citation counts, funding success, policy changes, and commercial agreements to track the effectiveness of the communication strategy and adjust as necessary.

Level	Objective	Suggested KPIs
Core Message	Develop a clear and concise message.	Clarity of message, Consistency of message across channels, Adaption of message for each stakeholder, Alignment with the research project vision
Contextual Relevance	Ensure messages are relevant and meaningful in the context of the research project	Alignment with broader social, environmental, and economic context, Effectiveness in conveying the significance and impact of the research project
Stakeholder Adaptation	Tailor the message to each stakeholder in the Quintuple Helix model	Appropriateness of message for each stakeholder, Alignment with stakeholder interests and priorities, Effectiveness of stakeholder-specific communication channels
Communication Channels	Identify the most effective communication channels for each stakeholder	Usage and effectiveness of each communication channel, Integration and consistency of communication channels, Audience reach and engagement
Omnichannel Approach	Utilize an omnichannel approach to distribute messages	Cross-platform consistency, Level of audience engagement across channels, Alignment with the project's context
Impact Assessment	Monitor and evaluate the impact of the communication strategy	Metrics such as website traffic, social media engagement, media coverage, citation counts, funding success, policy changes, commercial agreements

Table 3. The Integrated Omnichannel Dissemination and Communication (IODC) Matrix

Conclusion and Future Work

In conclusion, developing and implementing an integrated omnichannel dissemination and communication strategy for research projects is crucial for ensuring that research findings are effectively disseminated to relevant stakeholders and maximize their impact on the broader society (Gudele, 2019). The proposed framework presented in this paper offers a comprehensive approach to developing and evaluating such a communication strategy, considering the stakeholders in the Quintuple Helix model and the respective communication channels. The framework offers a clear structure to ensure that the core message of the research project is communicated consistently and adapted appropriately for each stakeholder while being distributed effectively across various communication channels. The proposed KPIs for each level of the framework enable the evaluation of the effectiveness of the communication strategy and the optimization of its impact. Implementing the framework has the potential to contribute to the successful communication and dissemination of research findings, which can lead to positive outcomes such as commercial, academic, and social exploitation. Next steps include the operationalization of the IODC Framework to the Plooto project and its evaluation relevant to the KPIs proposed and monitored during (and after) the projects' lifespan.

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