



COLECCIÓN CONOCIMIENTO CONTEMPORÁNEO

Horizontes de la Comunicación: teoría y práctica en la era digital

Coord.
Santiago Mayorga Escalada

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TEORÍA Y PRÁCTICA EN LA ERA DIGITAL



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CHALLENGES FOR ACHIEVING MARKET ORIENTATION IN TECHNOLOGICAL CENTRES

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1. INTRODUCTION

The European business environment is currently shaped by significant macroeconomic disruptions, including persistent inflation, energy market volatility, and restrictive monetary policies. The European Central Bank's successive interest rate hikes to contain inflation have increased financing costs, there-by constraining investment and dampening consumer demand (European Central Bank, 2023). Furthermore, the prolonged effects of the war in Ukraine have disrupted energy supplies and trade flows, intensifying economic uncertainty across the region (OECD, 2023). These conditions pose strategic challenges for firms, compelling them to adapt through cost optimisation, supply chain restructuring, and enhanced risk management to navigate an increasingly volatile and constrained economic land-scape.

Since 2022, rapid technological advancements have profoundly reshaped the global business con-text. The accelerated development and diffusion of artificial intelligence—particularly generative AI tools such as large language models—have transformed business processes, customer interactions, and decision-making dynamics (Brynjolfsson & McAfee, 2023). Simultaneously, the increasing integration of digital twins, cloud computing, and Internet of Things (IoT) technologies has redefined operational efficiency and value creation across industries (Schwab, 2023). Moreover, the wide-spread adoption of remote and hybrid work models has stimulated innovation in cybersecurity and digital

collaboration platforms (Westerman et al., 2023). These technological shifts necessitate continuous upskilling, the redesign of digital strategies, and the adaptation of organisational structures to maintain competitiveness. Importantly, the convergence of these technologies also raises ethical, regulatory, and sustainability challenges, compelling organisations to balance digital transformation with responsible innovation.

In this business environment, characterised by increasing competitiveness and rapid technological advancement, the ability to integrate market intelligence into organisational processes has become a key factor for sustainability and long-term success (Day, 1994; Kohli & Jaworski, 1990). Market orientation involves not only the collection of relevant information on customers and competitors, but also its effective dissemination and strategic utilisation in decision-making processes (Narver & Slater, 1990). Within this context, technology centres play a critical role in knowledge transfer and the promotion of innovation across the business ecosystem (Del Campo, 2023). However, their responsiveness to market dynamics largely depends on cross-functional coordination and the effective integration of market intelligence into internal processes. The implementation of organisational structures that foster interdepartmental collaboration and data-driven decision-making can enhance adaptability to changing environments and generate sustainable competitive advantages (Slater & Narver, 1995; Moorman & Rust, 1999). Within technology centres, the range of activities offered is broad and diverse (Izushi, 2003), which inevitably leads to complex structures and processes that hinder information flows and interdepartmental cooperation. This challenge is further compounded when the organisation is part of a network of technology centres formed through mergers, as such integration processes may result in redundancies in research areas, technological domains, and market focus.

1.1. TECHNOLOGY CENTRES IN THE BASQUE COUNTRY

The Basque Country is a benchmark in innovation and technology at the European level, owing to its network of technology centres of excellence. In this study, we focus on the Basque Research and Technology Alliance (BRTA), an alliance comprising 17 technology centres

and cooperative research centres that aim to address the socio-economic challenges of the Basque Country through research and technological development. These centres collaborate in the generation of knowledge and its transfer to Basque society and industry to enhance innovation and competitiveness.

One of the factors contributing to the consolidation of this leading position is the active participation of technology centres in international funding and scientific cooperation programmes. The region hosts 5% of Spain's Horizon Europe projects, despite accounting for only 4.5% of the national population (Basque Government, 2023). Between 2020 and 2023, Basque technology centres secured €320 million in European funding through programmes such as Horizon Europe and LIFE, according to data from Innobasque (Innobasque, 2023).

However, technology centres frequently face significant challenges. The first, common to many such institutions, lies in the barriers associated with commercialising their research outputs—often referred to as the "research-to-market gap." These barriers arise partly because the technologies developed are frequently at early stages of readiness and misaligned with immediate market needs, resulting in delayed or unsuccessful market uptake. As Izushi (2003) emphasises, the utility of research institutes for firms often depends on long-standing relationships that bridge the gap between scientific development and commercial application. Furthermore, Del Campo (2023) notes that although technology centres are pivotal in fostering innovation, their outputs tend to have a long-term focus, creating a temporal disconnection between technological maturity and industrial demand. This situation necessitates the design of mechanisms that enhance market orientation and strengthen collaborative integration with industrial stakeholders, thereby reducing the lag between technological development and real-world application.

A second challenge relates to the structural complexities that arise within alliances in terms of functional coordination and strategic alignment. While alliances promote collaboration and resource consolidation, they often complicate coordination across heterogeneous organisational units with distinct institutional logics and market orientations. As Pon and Duncan (2019) observe, networks and alliances often

operate at the periphery of organisations and may not immediately influence core processes, resulting in fragmented internal coordination and limited synergy in decision-making structures. Moreover, the integration of market intelligence within such alliances is hindered by the absence of shared mechanisms for data interpretation and dissemination, leading to inconsistent strategic responses across units. These insights underscore the importance of developing governance models that facilitate cross-unit communication and standardised intelligence systems in multi-institutional alliances.

Unlike typical market-oriented firms, technology centres such as the BRTA and the Fraunhofer Institutes pursue a broader mission that extends beyond economic value creation. These institutions operate under hybrid value systems, combining objectives of market competitiveness, technological advancement, and societal impact. As Bozeman (2003) contends in his Public Value Mapping (PVM) framework, research and technology organisations (RTOs) should be assessed not solely by commercial or profitability metrics, but by their contribution to societal well-being, policy goals, and the broader public good.

Similarly, Perkmann and Walsh (2007) emphasise that institutions engaged in science–industry collaboration often pursue non-market objectives, such as regional development, knowledge dissemination, and workforce capacity-building. This is particularly relevant in the Basque Country, where technology centres act as intermediary actors within complex innovation ecosystems—facilitating knowledge transfer, supporting SMEs, and advancing industrial modernisation strategies in alignment with regional policy agendas.

Furthermore, literature by Kuhlmann and Arnold (2001), alongside recent EARTO reports, consistently highlights the strategic role of RTOs in promoting societal resilience, technological sovereignty, and mission-driven innovation—functions that transcend transactional customer value. These institutions frequently operate under multi-stakeholder governance models, balancing the needs of government, industry, and society.

1.2. CONCEPT OF CUSTOMER ORIENTATION

Customer orientation refers to an organisation's ability to identify and address the needs and expectations of its customers, placing them at the centre of its strategic and operational decisions. This approach is fundamental to fostering strong and enduring relationships, which, in turn, contribute to enhanced competitiveness and long-term organisational success.

A critical aspect of customer orientation is its role as a foundational pillar in cultivating positive relationships with end users. Empirical research demonstrates that customer orientation directly influences relational performance in brands and organisations (Kang, 2021). This relationship indicates that firms prioritising customer needs are more likely to develop effective integrated marketing communication (IMC) strategies that align with customer perceptions, thereby strengthening customer satisfaction and loyalty (Shuleski et al., 2019). Aligning business processes with a customer satisfaction strategy is essential to achieving a genuinely customer-oriented organisational model (Xu et al., 2023).

Internal management practices also play a vital role in reinforcing customer orientation. Effective internal marketing initiatives can increase employee satisfaction, which, in turn, contributes to enhanced customer service quality and greater organisational commitment (Chiu et al., 2014). This perspective is further supported by studies highlighting the significance of internal marketing in shaping a customer-centric organisational culture (Xu et al., 2023).

The implementation of customer relationship management (CRM) technologies has enabled organisations to build stronger, more efficient relationships with their users (Al-Khoury, 2012; Dubey & Sangle, 2019). In the context of technology hubs, it is essential that innovation efforts are also aligned with customer expectations. Research suggests that customer orientation plays a pivotal role in enabling firms to identify opportunities for incremental innovation that better leverage existing technological capabilities (Hortinha et al., 2011; Pan et al., 2021). This alignment often leads to the development of products and services that not only meet but surpass customer expectations.

Moreover, the benefits of customer orientation extend beyond customer satisfaction and are also reflected in broader organisational performance. Numerous studies across industries have confirmed the correlation between customer orientation and performance outcomes, showing that customer-centric firms consistently achieve improvements in operational efficiency and market competitiveness (Guo & Wang, 2015; Ismail, 2022). In this sense, a genuine commitment to customer orientation may serve as a critical differentiator for technology centres in the Basque Country, particularly within an increasingly competitive and evolving innovation landscape.

In addition, the effective utilisation of digital tools in customer relationship management—such as electronic CRM—has also been identified as a driver of customer loyalty and enhanced customer interaction (Wiratama et al., 2024; Al-Khoury, 2012). Thus, it is imperative not only to innovate in product and service offerings, but also to systematically adopt and implement technologies that enhance customer engagement and respond proactively to evolving customer demands—an essential condition for the sustained success of technology centres today.

There are two main approaches to customer orientation.

- **Reactive Orientation:** Consists of responding effectively to customers' current needs and problems. Organisations with this approach focus on solving the demands that customers express directly, ensuring their immediate satisfaction.
- **Proactive Orientation:** Goes beyond current needs, seeking to anticipate future customer demands. This approach involves a deep understanding of the market and emerging trends, enabling the organisation to innovate and offer solutions that customers have not yet identified as necessary.

The combination of both approaches enables organisations not only to address present customer needs but also to build long-term customer loyalty by anticipating and responding to future requirements. Both orientations have been considered in the present study.

1.3. MODELS FOR MEASURING CUSTOMER ORIENTATION

Measuring customer orientation is fundamental to establishing successful and sustainable business relationships. There are several theoretical and practical models that help organisations to assess and improve their customer orientation, focusing on customer satisfaction and loyalty, which in turn influences organisational performance.

To assess the degree of customer orientation in an organisation, various models and tools have been developed. One of the most recognised is the market orientation scale proposed by Kohli, Jaworski and Kumar (1993), which focuses on the following dimensions.

- Information generation: The organisation's ability to collect relevant data on customer needs and preferences.
- Dissemination of information: Effective internal distribution of collected information, ensuring that all departments are aligned with customer expectations.
- Information Response: Ability to act effectively and quickly based on the information obtained, adapting products and services according to the needs identified.

In addition to these models, Narver and Slater's (1990) Customer Orientation Index (COI) has been widely used in literature to measure customer orientation in terms of organisational culture. This index is composed of three fundamental dimensions:

- Customer orientation: The extent to which a company understands the needs of its customers and responds effectively.
- Competitive orientation: The organisation's ability to analyse and react to competitive movements.
- Cross-functional coordination: The degree to which different departments in the company work together to generate value for the customer.

It is important to note that market orientation effects may differ across contexts, especially in knowledge-intensive industries, Homburg et al.

(2004). Homburg et al. argue that market orientation is not a universally effective strategy — its impact varies significantly depending on the organizational context, including Industry type (e.g., high-tech vs. low-tech), Knowledge intensity, Organizational structure and complexity. This is critical because technological centres in the Basque Country, belonging to BRTA, operate in non-traditional market environments. They often serve multiple stakeholders — not just customers but also government bodies (at different geographical levels such as local, regional, national and international levels), research partners, and funding agencies. Their goals may include technology transfer, industrial modernization, and regional innovation development, which go beyond standard customer satisfaction or profitability metrics.

In knowledge-intensive sectors such as the one used in this research, value creation often emerges from internal knowledge recombination and long-term partnerships, not just from responding to existing customer needs. Therefore, the effect of cross functional coordination takes more relevance as part of this research.

2. OBJECTIVES

The main objective of this study is to examine the conditions and internal factors that affect the ability of technological centres to adopt and implement a market orientation strategy. In recent years, the literature has increasingly recognised that market orientation is not only a commercial or private sector concern, but a strategic imperative for research and innovation-driven organisations that must respond to fast-changing environments, industrial demands, and societal challenges. Within this context, the present research explores the case of the Basque Research and Technology Alliance (BRTA), a post-merger alliance of 17 technology centres that collectively aim to enhance regional competitiveness and technological transformation.

Given the increasing pressure on technology centres to be both scientifically excellent and market-responsive, this study seeks to analyse the extent to which these centres are adopting behaviours and practices consistent with market orientation principles, as described in models such as the MARKOR scale (Kohli et al., 1993). The research pays

particular attention to how market intelligence is generated, disseminated, and translated into coordinated organisational action. It also addresses structural and operational challenges, such as internal misalignments or inconsistent adoption of digital foresight tools, which may hinder the development of a coherent market-oriented strategy across a diverse institutional landscape.

Based on this context, the study is structured around two specific objectives:

- To examine the frequency and effectiveness of cross-functional meetings within technological centres to determine their impact on internal coordination.
- To evaluate the quality of information exchange across departments and its influence on the interpretation and application of market intelligence.

These objectives are intended to contribute not only to academic understanding but also to practical insights for managers and policymakers seeking to support the transition of technology centres toward more strategically integrated, agile, and market-oriented organisations.

3.1. STUDY DESIGN

This study adopts a quantitative approach, using a cross-sectional and descriptive design. Data collection was carried out by means of a structured online questionnaire applied to technology centre managers.

3.2. SAMPLE

The sample consisted of 51 managers of technology centres belonging to the Basque Science, Technology and Innovation Network (BRTA). A non-probabilistic sample was selected by convenience, focusing on managers with decision-making power over customer-oriented strategies within their organisations.

3.3. DATA COLLECTION INSTRUMENT

An ad-hoc designed questionnaire based on the market orientation scale of Kohli et al. (1993) was used. This questionnaire included 5-level

Likert scale questions (-3 = Strongly Disagree, 3 = Strongly Agree), addressing the following dimensions:

- Market information / intelligence sharing (Example: "We have interdepartmental meetings to discuss market trends and developments").
- Market information / intelligence sharing (Example: We hold cross-functional meetings in order to integrate market intelligence. ").

While no formal psychometric validation was carried out for this adapted version, the conceptual integrity of the original MARKOR framework served as a strong basis for constructing the items. The reduction to three core indicators was driven by practical considerations, including the need to minimise respondent fatigue among senior-level participants and maintain a high response rate. Nevertheless, the selected items were deliberately crafted to retain the diagnostic intent of the original model and reflect the strategic orientation, coordination capacity, and technological foresight of the organisations under study.

3.4. DATA COLLECTION PROCEDURE

Data was collected through online surveys sent to participants. Data confidentiality and anonymity of responses were always guaranteed, with the informed consent of the research participants.

3.5. DATA ANALYSIS

The collected data were subjected to descriptive statistical analysis, focusing on measures of central tendency (mean, median) and distribution (standard deviation) for each item. No inferential statistics were applied, as the aim was exploratory rather than predictive. Interpretation of results was conducted in collaboration with domain experts to ensure contextual accuracy and relevance to the operational realities of the participating technology centres.

4. RESULTS

The results of the study provide insightful evidence on the current state of intelligence dissemination and integration practices within the

surveyed organizations. In terms of intelligence dissemination, the highest agreement was observed in the statement “We share information about major market developments” (mean = 0.94), suggesting that market trend communication is relatively well-established. Moderate agreement was also found regarding the use of interdepartmental meetings to discuss market trends (mean = 0.49) and the sharing of customer and competitor information across functions (mean = 0.47). However, two items revealed slightly negative scores: “Marketing personnel take time to discuss customer needs with other functional departments” and “Customer satisfaction data is shared at all levels of the organization”, both scoring -0.12, indicating potential gaps in cross-functional communication and the internal flow of customer-related insights.

TABLA 1. Results

Intelligence Dissemination	Mean	STD	Median
We have interdepartmental meetings to discuss market trends and developments.	0,49	1.96	1
Marketing personnel take time to discuss customer needs with other functional departments.	-0,11	2.15	1
We share information about major market developments.	0,94	1.62	1
Customer satisfaction data is shared at all levels of the organization.	-0,11	2.21	-1
When one function acquires important information about customers or competitors, it shares that information with other functions.	0,47	1.76	1
Market information / intelligence sharing			
We hold cross-functional meetings in order to integrate market intelligence.	0,12	1.94	1
We reach an organizational consensus regarding the overall meaning of the specific information we have gathered before taking action.	-0,06	1.67	1
We use cross-functional teams or working groups for important initiatives to ensure that all perspectives are considered before making decisions.	0,86	1.88	1
Collaboration is valued in my organization.	2,16	1.88	3

Note: N= 51 (-3 = Strongly disagree 3=Strongly agree)

Regarding intelligence integration, the most prominent result by far was the high agreement with the statement “Collaboration is valued in my organization” (mean = 2.16), suggesting a strong cultural foundation that could support broader integration mechanisms. Additionally, there was a positive perception of using cross-functional teams for decision-making in important initiatives (mean = 0.86). However, weaker levels of agreement were observed for “We hold cross-functional meetings to integrate market intelligence” (mean = 0.12) and “We reach organizational consensus on the meaning of gathered information before taking action” (mean = -0.06), indicating room for improvement in formal coordination processes and collective sensemaking practices. Overall, while collaboration appears to be culturally embedded, the operational mechanisms for intelligence integration and dissemination still show inconsistencies that may hinder a fully market-oriented approach.

5. DISCUSSION

The findings of this study reveal a complex picture of how market intelligence is disseminated and integrated within technological centres. While certain practices—such as the sharing of market developments and collaborative decision-making—appear moderately embedded, others, particularly related to customer-focused intelligence and structured coordination mechanisms, remain underdeveloped.

From a strategy implementation perspective, Homburg, Workman, and Krohmer (2004) argue that the success of market orientation depends not only on the presence of market knowledge but also on the degree to which it is effectively integrated across organizational functions. In the present study, although market information (e.g., trends and competitor insights) is relatively well disseminated (mean = 0.94 and 0.47), there is limited evidence of strong customer intelligence flow or interdepartmental engagement with customer needs (both with means of -0.12). This suggests that customer-related intelligence is not deeply embedded in cross-functional processes, pointing to a gap between market intelligence generation and its strategic utilization across departments—an issue central to Homburg et al.’s critique.

Additionally, the low scores on formal integration mechanisms (e.g., cross-functional intelligence meetings, mean = 0.12, and consensus-building on insights, mean = -0.06) contrast with the strong cultural appreciation for collaboration (mean = 2.16). This misalignment reinforces Kohli, Jaworski, and Kumar's (1993) MARKOR framework, which emphasizes the need for systematic intelligence generation, dissemination, and responsiveness. While elements of intelligence generation and informal dissemination exist, the responsiveness dimension appears weaker, suggesting the absence of structured routines that translate market insights into coordinated action. The sense of belonging and willingness of being perceived as a sole research centre may be behind this unusual high score. It is also noted that during the last years, BRTA has made big efforts both internally and externally to push the integration of the different centres, boosting the sense of belonging.

Moreover, considering the specific context of technological centres, these limitations may not solely reflect implementation inefficiencies but rather a broader conceptual misfit. As Perkmann and Walsh (2007) highlight, institutions embedded in university–industry interfaces and knowledge ecosystems often operate under hybrid value logics, blending commercial goals with long-term scientific advancement, technology transfer, and regional development. In this context, traditional market orientation models—developed for firms with clearly defined customer markets—may overlook the multi-stakeholder dynamics and non-economic value creation objectives that shape strategic behaviour in such organizations.

Taken together, these findings suggest that while elements of market orientation are present, they remain fragmented and insufficiently institutionalized. A more comprehensive approach is needed—one that integrates structured intelligence responsiveness mechanisms (as emphasized by the MARKOR model), aligns implementation processes with cross-functional strategy (per Homburg et al.), and accommodates the societal missions and open innovation dynamics of technological centres (as discussed by Perkmann and Walsh).

6. CONCLUSIONS

This study has examined the practices of intelligence dissemination and integration within technological centres, with a particular focus on their alignment with market orientation frameworks. The results reveal a mixed landscape: while certain mechanisms for market information sharing and collaborative culture are in place, more structured and systematic integration processes remain underdeveloped. These findings highlight the importance of not only generating and disseminating market intelligence but also ensuring that such knowledge is effectively interpreted and acted upon across functional boundaries.

Drawing on the MARKOR framework (Kohli, Jaworski, & Kumar, 1993), the study suggests that technological centres demonstrate moderate levels of intelligence generation and dissemination but fall short in the dimension of responsiveness. The lack of formal structures for integrating intelligence into strategic decision-making processes limits the ability of these organizations to capitalize fully on market insights. This gap is further underscored by Homburg, Workman, and Krohmer (2004), who argue that market orientation must be supported by coordinated implementation mechanisms across the organization to be truly effective. These results are also coherent with Pon and Duncan (2019) where networks and alliances often operate at the periphery of organisations, resulting in fragmented internal coordination and thus, making difficult sharing efficiently information amongst the parties involved.

Moreover, this research reinforces the need to consider the distinctive nature of technological centres. As Perkmann and Walsh (2007) emphasize, these institutions often operate at the interface of academia, industry, and government, and pursue broader missions that extend beyond traditional economic objectives. Therefore, conventional models of market orientation may not fully capture the complexity of their value creation logic, which includes societal impact, technological development, and policy alignment.

Despite its contributions, this study is not without limitations. The use of a non-probabilistic convenience sample limits the generalisability of the findings beyond the participating institutions. Furthermore, the

exclusive reliance on self-reported perceptions introduces potential biases, as responses may reflect subjective impressions rather than observed organisational behaviours. The streamlined questionnaire, while theoretically grounded, was not subjected to psychometric validation and therefore may lack the rigour required for predictive modelling or comparative benchmarking.

Future research could build on these findings by pursuing several directions. First, longitudinal studies would be valuable in tracking the evolution of market orientation practices within BRTA centres over time, particularly as post-merger integration progresses. Second, applying validated instruments across a larger and more diverse sample could enhance the robustness and generalisability of results. Comparative studies involving other regional innovation ecosystems would also shed light on how structural, cultural, and policy factors influence the success of market orientation strategies in research and technology organisations. Finally, qualitative research—such as in-depth interviews or case studies—could uncover the tacit routines, leadership dynamics, and cultural barriers that either enable or hinder the institutionalisation of market orientation.

In sum, while the technological centres studied demonstrate growing awareness and engagement with market orientation principles, the road to maturity requires continued investment in strategic planning, integrative leadership, and the systemic use of digital foresight tools. Strengthening these areas will be crucial for consolidating the BRTA's position as a key driver of innovation, competitiveness, and sustainable development in the Basque Country.

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