Marketing Plans for Technological Innovation Centers: 05 Success Cases

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Abstract

Marketing theory since developed by Prof. Jerome McCArthy (1960) fixing the 4Ps mode and later systemized by Prof. Philip Kotler (1962), has been studied and applied almost by default in private companies and particularly in mass consumer products. The functionality and application of marketing theory to technological innovation processes have several publications, articles and contributions based on specific experiences and field cases in different parts of the world, but we realize that we are still far from a structured body of knowledge and universally applicable methodologies.

In Perú, the first Technological Innovation Centers (CITEs in Spanish) was created in 1988, focused in supporting leather and footwear sub-sector; now in 2025, there exists 45 CITEs, installed all over the country serving variety of production chains, including agroindustry, fishing and aquaculture, leather and footwear, forestry timber, camelid textiles, and others.

Part of the strategy for creating CITEs is their articulation with specific production chains to improve its competitiviness, which is why most of them are CITEs that promote hard technologies, industrial processing or transformation technologies.

However, the very nature of their condition and their actions means that these organisations have a strong bias towards the product rather than the market, towards supply rather than demand, which opens up an important space for marketing, with the necessary adaptations to reflect the complexity of technological innovation, to contribute.

The biggest challenge of this proposal is the adaptation of the theoretical frameworks of marketing whose universal reference are brands such as Coca-Cola, McDonald's, Xerox, Burger King, Starbucks (B2C approaches) to the market of technological innovation processes (B2B).

Keywords: marketing, innovation, technology, markets, marketing plans, marketing tools, technology diffusion, market driven, consumer driven, technology adoption

1. Background

Between 2017 and 2018, the Peruvian Technological Institute (*Instituto Tecnológico del Perú – ITP*) commissioned the Center for Technological Innovation in Marketing, CITEMarketing/Mercadeando S.A., to develop Marketing Plans for six of its more than 40 Productive CITEs. These CITEs, operating across diverse sectors such as agro-industry, footwear, crafts, and forestry, provide decentralized technological services nationwide.

CITEs (Centers for Technological Innovation) are organizations whose fundamental objective is to provide technological services to actors within specific production chains across various regions, promoting innovation, quality, and productivity while also offering specialized information for the competitive development of the national industry.

In 2019, a quantitative evaluation was conducted to measure the impact of the Marketing Plans on the performance of the CITEs, confirming the successful development of a unique methodology that enhances the reach of Technological Innovation Centers.

2. Theoretical Framework of a Marketing Plan Approach for CITEs

A brief review of the global marketing literature shows that in the specific field in which CITEs operate, technology transfer and innovation, the literature is almost nonexistent. A quick Google search for the terms Technology Marketing or Technology Services Marketing yields hundreds of references, but 98% of these relate to the use of technology—read: the internet—to mass-produce commercial communication, and the remaining 2% relate to how

to launch technological innovations into the consumer market—read: Uber ®, etc.—these conceptual frameworks are far removed from the work of CITEs. Punctually, we found only 03 bibliographic references that come close to the concept sought:

Table 1. Marketing of technological innovation literature found

	Document	Review
1	"Innovation: A Theoretical Review from a Marketing Perspective" (Jordan Sánchez, 2011)	It provides an extensive bibliographic survey of the conceptual frameworks of both innovation and marketing, without any application cases or implementation tools.
2	"Marketing, Innovation and New Businesses" (Maqueda la Fuente: 2010)	Explores the contribution these two concepts make to new business creation. It does not establish how marketing applies to technological innovation.
3	"Marketing Strategies for Technology Innovation Products" (Zhurylo & Iazvinska: 2007)	They develop a series of analyses on marketing strategy applied to technological innovation, with a strong conceptual focus, without implementation tools.

Moreover, we found dozens of papers about *technology innovation in marketing* focused in explore how technological innovations (mostly internet or digital tools) facilitate the marketing management of companies, a concept that is far from the approach we are looking for.

An additional detail that is important to highlight: the most recent bibliographic reference for Marketing of technological innovation dates from 2011, 14 years ago.

Is it possible for technological innovation state of art to develop without solid marketing theoretical frameworks, marketing systematized and applicable concepts and tools?, since the very concept of innovation being the successful introduction to the market?.

This initial validation clearly establishes the context in which this document is generated: we are going to address a topic fraught with conceptual and operational gaps, with no structured global references on the subject. Therefore, the document we present today is pioneering in its field and fulfills CITEMarketing's mission to develop knowledge and technological innovation in Marketing.

From a bibliographical point of view, the best approximate reference to the work of CITEs is the document: "*Marketing strategies applied to technological services and results generated in R&D institutions*" from the Ministry of Science, Technology, and Productive Innovation of Argentina. It notes that its scope of analysis remains narrowly focused on R&D, failing to refine ideas regarding the "i" that defines the direction of the CITEs.

As a good document on the topic, and the first to define Services Marketing as a theoretical framework for Technological Marketing, it exhausts its investigations into how R&D reaches society through different mechanisms. CITEMarketing postulates that the aforementioned framework is correct, but only from the perspective of the supply (what product are we talking about?), and that this framework must be complemented by a framework that reflects the nature of the market involved: small, medium, or large companies, it is a B2B relationship. Technology Marketing (product) cannot be fully understood without the conceptual framework of Industrial Marketing (market).

On the other hand, having established that the appropriate conceptual framework for understanding the logic and dynamics of CITEs is a mix of Services Marketing and Industrial Marketing, a third component is added that adds complexity, but at the same time rounds out the necessary framework: the theory of customer service quality. Since technological services are a service by concept, it is impossible not to incorporate this new source of knowledge.

Seeking a synthesis, CITEs operate within a scenario of Technology Services Marketing for Businesses, a concept that draws on three theoretical sources and fully captures the core of these institutions' work: technology transfer.

We will review part of the excellent conceptual framework developed by the Argentine Ministry of Technology and Technology (MINCYT), pages 11-13:

> *"…Marketing includes the construction of profitable exchange relationships with customers, driven by the determinants of value" and is therefore defined as "…the process by which companies create value for customers and build strong relationships with them to obtain value from them in return" (Kotler 2009, p. 6).*

> "*Marketing is a way of conceiving and executing an exchange relationship, with the aim of ensuring that it is satisfactory for the parties involved and for society, through the development, valuation, distribution, and promotion, by one party, of the goods, services, or ideas that the other party needs*" (Santesmases et al., 2007).

Both definitions emphasize the exchange relationship between someone who has a product or service that will be of interest to an individual, a company, or society as a whole, and the emphasis on meeting society's needs or solving its problems.

It is important to consider that when considering technology and knowledge markets, they are perceived by the customer as an intangible that can combine a good (infrastructure, equipment, etc.) and a service (consulting, implementation, scientific knowledge, etc.). For this reason, González Sabater J. (2011, p. 72) believes that "...*an appropriate marketing strategy is to focus its promotion from the perspective of services marketing*."

The marketing mix refers to the tools or variables available to the marketing manager to meet the organization's objectives. In the early 1960s, Jerome McCarthy, a marketing professor at Michigan State University, condensed these variables into four, which are currently known as the 4 P's such as the 4 Ps of Marketing or the Marketing Mix (Product, Price, Place, and Promotion).

In recent years, it has been considered that when it comes to organizations that provide services, such as universities and research institutes, it is necessary to expand the variables to include: Personnel, Processes, and Physical Evidence Booms, B.; Bitner, M.J. (1981).

For Santesmases et al. (2007), the application of marketing principles and methods to services is neither simple nor directly applicable. Although the principles and methods are the same, all the differentiating characteristics of the services and how they are valued by users must be taken into account.

In general, it can be said that the implementation of marketing in organizations is based on activities developed at two levels: Strategic Marketing and Operational Marketing.

Strategic Marketing: This function is characterized by analyzing and understanding the market to identify opportunities that allow the organization to satisfy consumer needs and desires better and more efficiently than the competition. Its objectives include the continuous analysis of the needs of key customer groups, as well as the design and production of a package of products or services to better serve these segments based on a defined positioning.

By achieving these objectives, the organization is more likely to achieve a sustainable competitive advantage (Lambin et al., 2009; Munuera Alemán and Rodriguez Escudero, 2007).

Operational Marketing: This function is characterized by implementing the strategies designed in the previous stage. It is responsible for translating marketing strategies into a series of tactical decisions that consider the policies of the Controllable Variables. Traditionally, these variables are: Product (goods and services), Price, Distribution, and Communication, and are used to stimulate demand and allocate a budget for these actions. The ultimate goal is to establish the exchange relationship with buyers (Lambin et al., 2009; Munuera Alemán and Rodriguez Escudero, 2007).

For Munuera Alemán et al. (2007), "*a market is the set of consumers who share a specific need or function and are willing to satisfy it through exchange*." This exchange materializes with the commercialization of a particular good or service. Thus, the concept of Product-Market arises, that is, the organization's decision regarding 1) which product (or technology) it wants to market, 2) to which market segment, 3) to satisfy which need (or solve which problem).

The definition of the Product-Market is fundamental for making strategic marketing decisions and designing the marketing plan.

Having outlined the concepts of Strategic Marketing and Operational Marketing, it is pertinent to present a definition of a Marketing Plan and then outline its specificities in the context of Knowledge Transfer.

Sainz de Vicuña Ancín (2008) presents it as a written document with systematized and structured content, clearly defining the areas of responsibility of the marketing function, and enabling control of commercial and marketing management.

Considering the scope of this work, the Technology Marketing Plan is a written document that, in a systematic and structured manner and following the corresponding analyses and studies, identifies business opportunities, defines the objectives to be achieved within a given period, and details the specific strategies and programs that harmonize marketing variables to achieve the stated objectives within the planned timeframe.

Technology transfer can be understood as a set of steps that describe the formal transfer of inventions resulting from scientific research conducted by universities to the productive sector (Stevens et al., 2005). Therefore, technology

acquisition through transfer allows organizations in the sector to acquire new products, processes, or technology without having to participate in the costly and risky initial steps of research and development (R&D) (Hung & Tang, 2008), allowing for the sharing of risks and costs with other institutions. This involves the transfer of technology and knowledge from one organization to another (Bozeman, 2000).

A final reflection about all the theoretical review we made: we perceive it is possible that in current literature, some technological innovation marketing themes are developed but under certain specific cases, by not being recognized as such, they are not articulated in an organic body of knowledge, but rather they generate important but fragmented analyses of variables or spaces that should be addressed under the structure of marketing analysis.

Under this line of reflection, we can mention the work of Kumar and Singh (2024), who speak of "*market orientation*" as a critical variable for better or worse performance in the market of 4.0 technologies. Is not "*market orientation*" the essence of the "marketing" concept?. This fragmented and implicit conceptualization of marketing can be found in Vlašića, G., Keleminićb, K., Dropulićc, B. (2022): "*The Impact of Market-Driven Vs. Market-Driving Strategies on Products' Short-Term and Long-Term Sales Growth***".**

Another punctual case development where marketing is partially addressed in specific case and situation is the work of Dehghanil, Abubakar, Pashna (2022), in his paper "*Market-driven management of start-ups: The case of wearable technology*". "*Market - driven*" is not the principles of marketing theory?.

Finally we must recognize the effort to consolidate information on this matter developed by Branstad, A. & Solem, B. A. (2020), in "*Emerging theories of consumer-driven market innovation, adoption, and diffusion: A selective review of consumer-oriented studies*", but the question remains the same: isn´t "*consumer driven*" or "*consumer oriented*" principles of the whole marketing theory?, since marketing theory was developed by 1962, isn't it superfluous to talk about emerging theories on one specific topic subject buy 2020?. Clearly, the review of Branstad, A. & Solem B. document, shows their conceptualization of "*consumer-oriented*" or "*consumer-driven*" refers to the needs and desires of the market, and to consumer behavior, topics that marketing has addressed since 1960, even in B2B or B2C context.

This paper is not a new theory of *demand driven* or *consumer driven* approach for technological innovation services; is about the adaptation of the whole an integrated marketing theory to the nature and specifics of technological innovation, seeking to contribute to the future development of a general theory of marketing of technological innovation.

3. Methodology of the Marketing Plans for CITEs

Since applying Marketing theory to the operational context of CITEs was a pioneering initiative, the methodological process was developed sequentially following this structured approach:

Figure 1. Methodological Process of the Marketing Plan for CITEs

Source: Mercadeando S.A. / CITEMarketing

Prepared by: Mercadeando S.A. / CITEMarketing

Table 2. Methodological Process of the Marketing Plan for CITEs

	Activity	Details
1	Definition of the conceptual framework	Review of existing literature, determination of the state of the art on Marketing for Technological Services, search for similar experiences, definition of the structure and sequence of the Plan.
2	Review of all literature on CITEs from secondary sources	Establishing the legal and operational frameworks in which the CITEs operate and identifying the restrictions that condition their commercial management.
3	Commercial Audit of the CITEs	Developing a variation of the Business Commercial Audit methodology created by Mercadeando S.A./CITEMarketing, conducting in-depth interviews with the directors and technical teams of the involved CITEs.
4	Development of the Field Data Collection Instrument	Interactive adaptation of the "*Preliminary Diagnosis for the Identification of Real and Potential Demand for Technological Extension and Innovation Services in Companies*" instrument by Mercadeando S.A./CITEMarketing, adjusted for each productive sector involved (textiles, agro-industry, forestry, fishing, aquaculture) in consensus with each CITE.
5	Market survey among the client companies served by the CITEs	Application of surveys covering various variable fields: explicit and implicit demands for technological services, business approaches, use of quality systems, machinery and equipment park, perception of the CITE services, etc. Sampling was conducted based on quotas according to the different services provided by the CITE and convenience.
6	Data processing and generation of the Marketing Plan	Tabulation, processing, cross-referencing of variables, etc.
7	Debriefing with the CITEs	Presentation of results, collection of observations and contributions, and generation of the final report.

Source: Mercadeando S.A. / CITEMarketing

Prepared by: Mercadeando S.A. / CITEMarketing

Mercadeando S.A. / CITEMarketing established that the appropriate conceptual framework for understanding the logic and dynamics of the CITEs is a mix of Service Marketing and Industrial Marketing, with an additional third component that adds complexity but also rounds out the necessary framework: the theory of customer service quality. Since technological services are inherently service- based, this source of knowledge cannot be ignored.

In summary, CITEs operate within a *Technological Services Marketing framework for Businesses*, a concept that draws from three theoretical sources and fully encapsulates the core mission of these institutions: technology transfer.

4. Methodology for Impact Evaluation

The evaluation focused on two key performance indicators that the ITP requires and monitors in the CITEs: the variation in the number of technological services and the variation in the number of companies served within a given period.

Statistics were gathered directly from the ITP's APP, which contained data from 16 CITEs, including the six whose Marketing Plans were developed by CITEMarketing/Mercadeando S.A.

Unfortunately, there was no available performance data for the CITEs from 2017, preventing a linear comparison of their performance between 2018/2017 and 2019/2018. Given this scenario, a cross-sectional control group comparison was chosen: the six Productive CITEs assisted by CITEMarketing were compared to the performance of the remaining CITEs that were not part of this process.

However, this approach posed a challenge due to the diversity of sectors served. For example, how could the performance of a rural CITE (such as Ambo or Huaura) be compared with that of CITECcal, which operates in an

entirely urban setting (leather and footwear, Lima)?

To address this issue, a sectoral peer grouping approach was adopted, comparing the performance of CITEs that had Marketing Plans with those that did not but operated in the same production chain.

The following table presents the selection made from the other 16 CITEs for the corresponding comparison:

Table 3. Sectoral Peer Comparison of Performance

	CITE Assisted with Marketing Plan	Comparable Sectorial CITEs Without a Marketing Plan
1	Unidad Técnica Ambo del CITE Agroindustrial Huánuco	• CITE Agroindustrial Ica • CITE Agroindustrial VRAEM
2	Unidad Técnica Huaura del CITE Agroindustrial Ica	• CITE Agroindustrial Oxapampa • CITE Agroindustrial Moquegua • CITE Agroindustrial Huallaga • CITE Chavimochic • CITE Majes
3	CITE Pesquero Amazónico Ahuashiyacu	• CITE Pesquero Piura • CITE Pesquero Ilo
4	CITE Acuícola Ahuashiyacu	• CITE Pesquero Callao
5	CITETextil Camélidos Puno	• CITETextil Camélidos Cusco • CITETextil Camélidos Arequipa
6	CITE Forestal Maynas	• CITE Forestal Pucallpa

Source: Instituto Tecnológico de la Producción – ITP / RED CITE

Prepared by: Mercadeando S.A. / CITEMarketing

For performance evaluation within each calendar year, interannual quarterly series were used (e.g., results from Q1 2018 vs. Q1 2019) to capture seasonal fluctuations in business demand.

In cases where data was unavailable, such as when a CITE was in a pre- operational phase, those periods were excluded, and an annual consolidation was used to ensure uniform analysis and prevent distortions.

5. Impact Results of the Marketing Plan in Productive CITEs

5.1 Analysis of the Variation in the Number of Technological Services Provided

- An initial analysis reveals that, with the exception of CITE Pesquero Amazónico Ahuashiyacu, the other five CITEs that received Marketing Plans showed a positive quarterly increase in the provision of technological services.

Table 4. Performance of CITEs with Marketing Plan 2019 / 2018. Number of Services Provided

Quarter / Year	CITES WITH MARKETING PLAN											
	UT Agro-industrial Ambo		UT Agro-industrial Huaura		CITE Pesquero Amazonico		CITE Aquícola Ahuashiyacu		CITE Textil Camélidos Puno		CITE Forestal Maynas	
	No. Services	%	No. Services	%	No. Services	%	No. Services	%	No. Services	%	No. Services	%
1st Quart 2018	22		0		36		18		110		0	
2nd Quart 2018	62		0		926		53		385		59	
3rd Quart 2018	186		163		1730		115		983		126	
4th Quart 2018	296		272		2000		190		1684		146	
1st Quart 2019	77	250%	341		36	-3%	192	967%	249	126%	92	
2nd Quart 2019	207	234%	881		264	-71%	411	675%	1280	232%	363	515%
3rd Quart 2019	416	124%	1280	685%	617	-64%	934	712%	1797	83%	516	310%
4th Quart 2019	801	171%	1598	488%	1485	-26%	1287	577%	3095	84%	983	573%

Source: Instituto Tecnológico de la Producción – ITP / RED CITE

Prepared by: Mercadeando S.A. / CITEMarketing

- The table also shows that performance became particularly positive from the moment the Marketing Plans were implemented (highlighted in orange cells). In four of the six cases, the growth rate exceeded an average of 230%, indicating an initial boost effect from the Marketing Plan.
- The average quarterly growth rate (2019/2018) in the number of technological services provided by the six CITEs with Marketing Plans was 318%.
- The annual growth rate (2019/2018) in the number of technological services provided by these six CITEs was 367%.

Table 5. Quarterly Variation Rates in the Number of Services Provided- CITEs with Marketing Plan. 2019 / 2018

Quarter / Year	CITES WITH MARKETING PLAN / VARIATION IN NUMBER OF SERVICES 2019						
	UT Agro-industrial Ambo	UT Agro-industrial Haura	CITE Pesquero Amazonico Ahuashiyacu	CITE Acuicola Ahuashiyacu	CITE Textil Camelidos Puno	CITE Forestal Maynas	AVERAGE
1st Quart 2019	250%		-3%	967%	126%		335%
2nd Quart 2019	234%		-71%	675%	232%	515%	317%
3rd Quart 2019	124%	685%	-64%	712%	83%	310%	308%
4th Quart 2019	171%	488%	-26%	577%	84%	574%	311%
Annual Growth	165%	843%	-49%	651%	103%	490%	367%

Source: Instituto Tecnológico de la Producción – ITP / RED CITE

Prepared by: Mercadeando S.A. / CITEMarketing

- The average quarterly growth rate (2019/2018) in the number of technological services provided by the 12 CITEs that **did NOT implement a Marketing Plan** is 98.89%.
- The annual growth rate (2019/2018) in the number of technological services provided by the 12 CITEs that **did NOT implement a Marketing Plan** is 39.26%.

Table 6. Quarterly Variation Rates in the Number of Services – CITEs without a Marketing Plan. 2019/2018

OTROS CITES																							
CITEtextil Camélidos Cusco		CITEtextil Camélidos Arequipa		CITE Agroindustrial Chavimochic		CITE Agroindust. Huallaga		CITE Agroindust. Ica		CITE Agroindust. Majes		CITE Agroindust. Moquegua		CITE Agroindust. Oxapampa		CITE Agroindust. Vraem		CITE Forestal Pucallpa		CITE Pesquero Callao		CITE Pesquero Ilo		CITE Pesquero Piura	
N° de servicios	%	N° de servicios	%	N° de servicios	%	N° de servicios	%	N° de servicios	%	N° de servicios	%	N° de servicios	%	N° de servicios	%	N° de servicios	%	N° de servicios	%	N° de servicios	%	N° de servicios	%	N° de servicios	%
-		21		1,700		201		2,312		57		179		160		16		1,378		138		40		26	
-		189		4,531		965		7,183		165		584		561		500		3,458		600		151		149	
-		1,007		8,015		908		16,048		261		1,088		895		2,296		5,473		888		586		355	
-		2,015		11,882		1,739		33,647		378		1,301		1,100		4,084		7,635		1,294		925		536	
-		209	895%	3,471	104%	148	-26%	3,807	65%	82	44%	115	-36%	84	-48%	295	1744%	1,654	20%	115	-17%	17	-58%	115	342%
-		643	240%	7,366	63%	580	-40%	13,288	85%	277	68%	311	-47%	605	8%	1,557	211%	3,906	13%	469	-22%	214	42%	308	107%
40		1,434	42%	10,935	36%	1,894	109%	26,772	67%	349	34%	497	-54%	1,003	12%	2,659	16%	6,714	23%	1,121	26%	403	-31%	1,029	190%
718		2,492	24%	15,017	26%	4,082	135%	40,636	21%	447	18%	1,144	-12%	1,638	49%	3,811	-7%	9,522	25%	1,766	36%	861	-7%	1,668	211%
-		48%		41%		76%		43%		34%		-34%		23%		21%		21%		19%		-12%		193%	

Source: Instituto Tecnológico de la Producción – ITP / RED CITE

Prepared by: Mercadeando S.A. / CITEMarketing

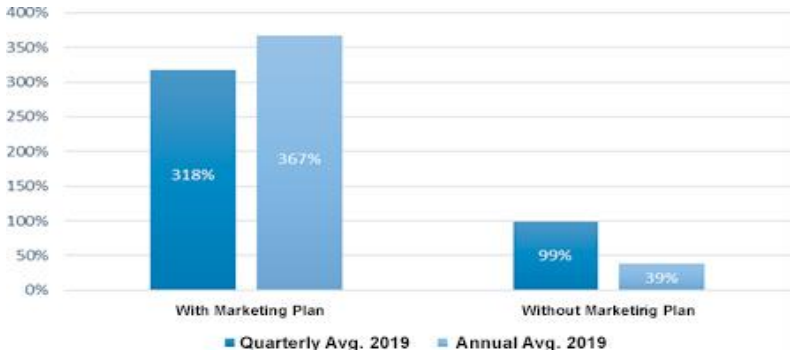
- On average, the performance gap in favor of the CITEs that benefited from the Marketing Plan service, compared to those that did not implement it, is +219.11% when measured quarterly and +327.74% when measured annually.

Graph 1. Quarterly Variation Rates in the Number of Services 2019/2018 CITEs with Marketing Plans vs. Other CITEs

Source: Instituto Tecnológico de la Producción – ITP / RED CITE

Prepared by: Mercadeando S.A. / CITEMarketing

Graph 2. Average Quarterly and Annual Variation in the Number of Services Provided. 2019/2018. CITEs with Marketing Plans vs. Other CITEs



Source: Instituto Tecnológico de la Producción – ITP / RED CITE

Prepared by: Mercadeando S.A. / CITEMarketing

5.2 Analysis of the Variation in the Number of Companies Served With Technological Services

- The discrepancy in results for CITE Pesquero Amazónico Ahuashiyacu persists compared to the other five CITEs that implemented a Marketing Plan.
- Once again, the existence of an initial boost effect in the performance of the CITEs is evident: in four out of the six cases, the growth rate exceeds an average of 300%, indicating a significant initial impact from the Marketing Plan.

Table 7. Performance of CITEs with a Marketing Plan 2019 / 2018 Number of Companies Served

Quarter/Year	CITES WITH MARKETING PLAN											
	UT Agro-industrial Ambo		UT Agro-industrial Huaura		CITE Pesquero Amazonico		CITE Acuícola Ahuashiyacu		CITE Textil Camélidos Puno		CITE Forestal Huaynas	
	No. Customers	%	No. Customers	%	No. Customer	%	No. Customers	%	No. Customers	%	No. Customers	%
1st Quart 2018	14		0		36		18		85		0	
2nd Quart 2018	32	129%	0		907	2419%	47	161%	265	212%	56	
3rd Quart 2018	141	341%	125		1673	84%	99	111%	625	136%	120	114%
4th Quart 2018	199	41%	165	32%	1911	14%	142	43%	906	45%	132	10%
1st Quart 2019	66	371%	36		27	-25%	177	883%	228	168%	74	
2nd Quart 2019	165	416%	72		192	-79%	322	585%	1073	305%	222	296%
3rd Quart 2019	298	111%	162	30%	464	-72%	806	714%	1430	129%	298	148%
4th Quart 2019	431	117%	208	26%	1209	-37%	1080	661%	2069	128%	606	359%

Source: Instituto Tecnológico de la Producción – ITP / RED CITE

Prepared by: Mercadeando S.A. / CITEMarketing

- The average quarterly growth rate (2019/2018) in the number of companies reached among the six CITEs that implemented a Marketing Plan is 260%.
- The annual growth rate (2019/2018) in the number of companies reached among the six CITEs that received the Marketing Plan service from CITEMarketing/Mercadeando S.A. is 213%.

Table 8. Quarterly Variation Rates in the Number of Companies Served – CITEs with a Marketing Plan. 2019/2018

Quarter / Year	CITES WITH MARKETING PLAN - BUSINESS ACQUISITION VARIATION 2019						
	UT Agro-industrial Ambo	UT Agro-industrial Haura	CITE Pesquero Amazonico Ahuashiyacu	CITE Acuicola Ahuashiyacu	CITE Textil Camelidos Puno	CITE Forestal Maynas	AVERAGE
1st Quart 2019	371%		-25%	883%	168%		349%
2nd Quart 2019	416%		-79%	585%	305%	296%	305%
3rd Quart 2019	111%	30%	-72%	714%	129%	148%	177%
4th Quart 2019	117%	26%	-37%	661%	128%	359%	209%
Annual Growth	149%	65%	-58%	679%	155%	290|%	213%

Source: Instituto Tecnológico de la Prpducción – ITP / RED CITE

Prepared by: Mercadeando S.A. / CITEMarketing

- The average quarterly growth rate (2019/2018) in the number of companies served among the 12 CITEs that did NOT implement a Marketing Plan is 81%.

- The annual growth rate (2019/2018) in the number of companies served among the 12 CITEs that did NOT implement a Marketing Plan is 34%.

Table 9. Quarterly Variation Rates in the Number of Companies Served – CITEs without a Marketing Plan. 2019/2018

OTROS CITES																							
CITEtextil Camélidos Cusco		CITEtextil Camélidos		CITE Agroindustrial Chavimochic		CITE Agroindust. Huallaga		CITE Agroindust. Ica		CITE Agroindust. Majes		CITE Agroindust. Moquegua		CITE Agroindust. Oxapampa		CITE Agroindust. Vraem		CITE Forestal Pucallpa		CITE Pesquero Callao		CITE Pesquero Ilo		CITE Pesquero Piura	
N° de clientes	%	N° de clientes	%	N° de clientes	%	N° de clientes	%	N° de clientes	%	N° de clientes	%	N° de clientes	%	N° de clientes	%	N° de clientes	%	N° de clientes	%	N° de clientes	%	N° de clientes	%	N° de clientes	%
0		21		692		114		152		49		63		139		14		386		138		40		26	
0		140	567%	762	10%	281	146%	387		112		188		379		402		804		600		151		149	
0		367	162%	840	10%	339	21%	855		147		436		594		1,727		1,301		888		586		355	
0		459	25%	904	8%	451	33%	1,288		186		485		708		3,019		1,617		1,294		925		536	
0		122	481%	726	5%	125	10%	260	71%	62	27%	26	-59%	69	-50%	266	1800%	349	-10%	115	-17%	17	-58%	115	342%
0		291	108%	862	13%	246	-12%	743	92%	213	90%	59	-69%	398	5%	1,102	174%	788	-2%	469	-22%	214	42%	308	107%
40		631	72%	976	16%	402	19%	1,145	34%	258	76%	102	-77%	637	7%	1,426	-17%	1,393	7%	1,121	26%	403	-31%	1,029	190%
660	1550%	817	78%	1,091	21%	891	98%	1,651	28%	298	60%	330	-32%	963	36%	1,707	-43%	1,922	19%	1,766	36%	861	-7%	1,668	211%
		89%		14%		40%		42%		68%		-56%		14%		-13%		8%		19%		-12%		193%	

Source: Instituto Tecnológico de la Producción / RED CITE

Preparead by: CITEMarketing/Mercadeando S.A.

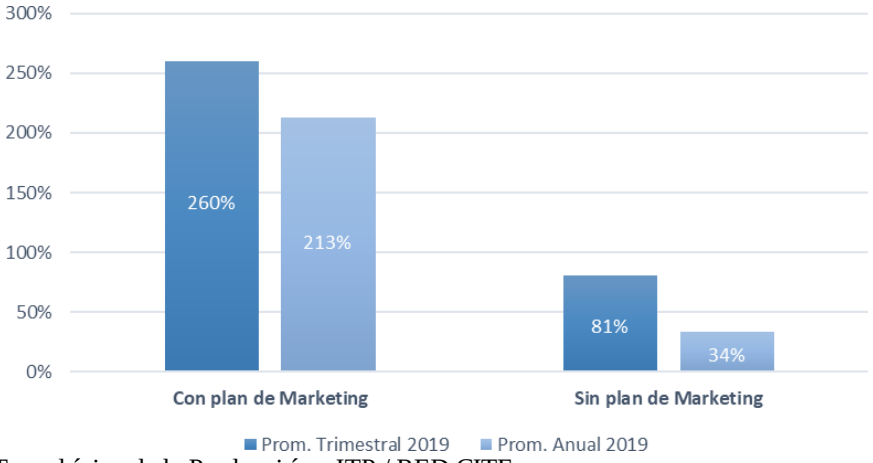
- On average, the performance gap in favor of the CITEs that benefited from the Marketing Plan compared to those that did not implement it is +232% when measured quarterly and +179% when measured annually.

Graph 3. Quarterly Variation Rates in the Number of Companies Served. 2019/2018 - CITEs with Marketing Plans vs. Other CITEs

Source: Instituto Tecnológico de la Producción – ITP / RED CITE

Prepared by: Mercadeando S.A. / CITEMarketing

Graph 4. Quarterly and Annual Average Variation in the Number of Companies Served 2019 / 2018 CITEs with Marketing Plans vs. Other CITEs



Source: Instituto Tecnológico de la Producción – ITP / RED CITE

Prepared by: Mercadeando S.A. / CITEMarketing

6. Conclusions

a. Performance statistics from ITP indicate that, overall, most CITEs saw growth in both key performance indicators: the delivery of technological services and the number of companies served in 2019.

b. However, the data reveal that CITEs that received marketing plan outperformed the average of all CITEs operating within the same business sectors with differences in results that on average exceed 200%.

c. Mercadeando S.A. / CITEMarketing does not claim full credit for these results. It is evident that without the dedication and commitment of the Directors and Officials of the productive CITEs, these achievements would not have been possible.

d. The Marketing Plan methodology for CITEs has proven to be both efficient and effective. As this was its first application to a sample of six CITEs, there is still room for refinement. However, no significant barriers exist that would prevent its expansion to other Technology Transfer Centers or privately-run Innovation Centers.

e. One success key factor of the methodology, has been it´s tailor made approach: it is just as important to understand the market and its requirements, conditions, and perceptions as it is to understand the innovation actor for whom the marketing plan will be designed, so that the final result adapts to their management models, dynamics, and work parameters.

f. Specifically, the key instruments applied conforming the Marketing Plan for CITEs Methodology, the *Commercial Audit* and the *Diagnosis Tool for The Identification of Real and Potential Demand for Technological Extension and Innovation Services in Industrial Companies* have also proven to be both efficient and effective.

g. Since the Marketing Plan methodology was specifically tailored to align with the structure and requirements of ITP/Red CITE (state institutions), it is highly likely that its application in private organizations would yield even greater results, as they are not subject to the same regulatory constraints as the public sector. For example, ITP cannot invest in advertising for its services or set sales commissions (variable income) for its employees.

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Authors' contributions

Ing. Joel Castillo Napur írevised the drafted manuscript; Prof. Julia Astudillo was responsible for data collection.

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