

Spotlight: Innovation in logistics service provision

A multi-perspective analysis of the industry's status quo

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01

Introduction and background



Introduction

Political and economic instability, along with immense supply chain disruptions, climate crisis, new technology and digital tools, skilled worker shortages – the business world is currently navigating through a confluence of micro- and macro-level challenges and trends. Amidst these turbulences, logistics and supply chain management (SCM) have experienced a fundamental shift. Being traditionally perceived as a largely invisible cost burden, these functions are now widely acknowledged as the backbone of societal prosperity. At the same time, however, dramatically changing market environments require established transport- and logistics-related concepts and strategies to be radically rethought.

Occupying a key role in global trade, the logistics industry in particular is increasingly being required to come up with innovative solutions and ideas. The criticality of innovations as a key strategy for logistics service providers (LSPs) to achieve and sustain competitive success is long accepted and empirically established (Bellingkrodt and Wallenburg, 2013; Deepen *et al.*, 2008; Panayides, 2006; Shou *et al.*, 2017; Wallenburg, 2009). Despite an abundance of buzzwords currently dominating the discussion around the “future of logistics”, however, the logistics service industry is often said to be lacking in innovation, very much driven by a down-to-earth mentality, and narrowly focused on solving short-term operational problems relating to specific clients. Thus, the question remains as to whether LSPs are capable of producing the necessary “game-changers for industry” (Grawe *et al.*, 2014, p. 183).

In an attempt to provide an answer, the present study was conducted with the aim of shedding light on the status quo of innovation management in the field of logistics service provision. Among others, the following key aspects are addressed:

- To what extent is new service development (NSD) institutionalized in LSPs?
- What are the drivers stimulating the development of logistics innovation?
- What level of resources should LSPs invest to push innovation forward?
- How innovative is the logistics industry? And how innovative are the service solutions that LSPs have developed in recent years?

Thus, the report offers a comprehensive picture of the current state of innovation development in LSPs. It relies not only on the service providers’ perspective, but also incorporates the voices of companies from industry and trade regularly buying in logistics services. In this way, valuable insights are gained into the relevance that logistics innovations have for shippers. Moreover, conclusions are drawn on the overall innovativeness of LSPs as perceived by their clients.

Methodology



Employing a cross-sectional survey design, an anonymous, self-completion online questionnaire was used to collect the data. The questionnaire link was sent to key informants in 3,368 firms located in Germany, Austria, and Switzerland. The sample was obtained from the company directory of the German Association for Logistics (BVL). With its more than 11,000 members predominantly from manufacturing, trade and (logistics) service provision, BVL represents the largest association for logistics and supply chain management in Germany. Thus, it is reasonable to assume that the sample is representative.

The initial invitation to participate in the survey was distributed in May 2021. Subsequently, two follow-up reminders were sent before the survey was closed in August 2021.

Once consent to participate in the survey was given, the respondents had to answer an initial screening question and indicate whether their company

- supplies logistics services,
- is a customer of one (or more) LSPs or
- is neither a provider nor a user of logistics services.

Respondents indicating the latter were screened out and directed to the end of the survey, whereas respondents from LSPs and clients of LSPs were shown different sets of questions.

02

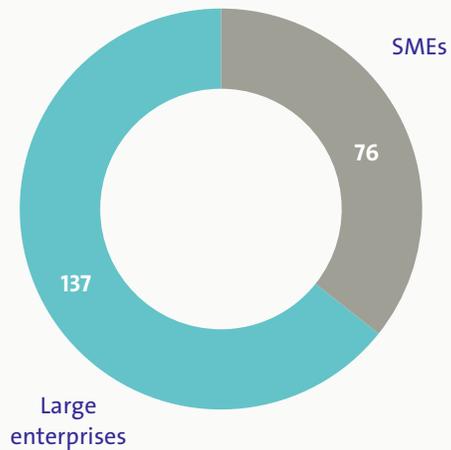
The logistics service providers' perspective on logistics innovation



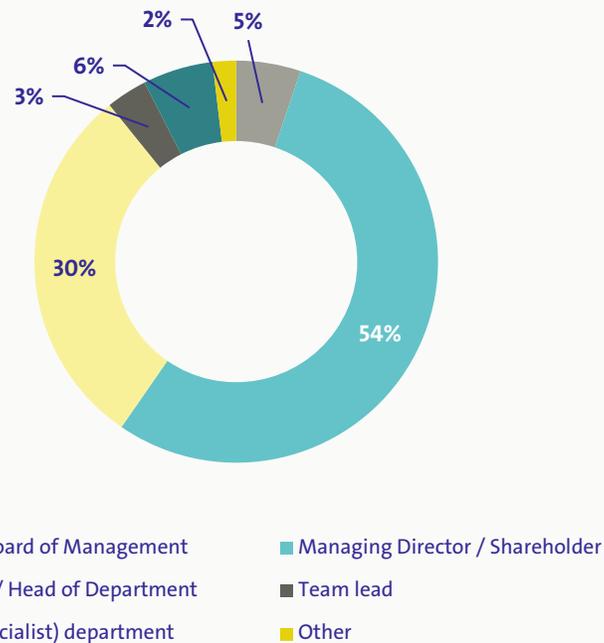
213 experts from LSPs participated in the survey

Sample demographics

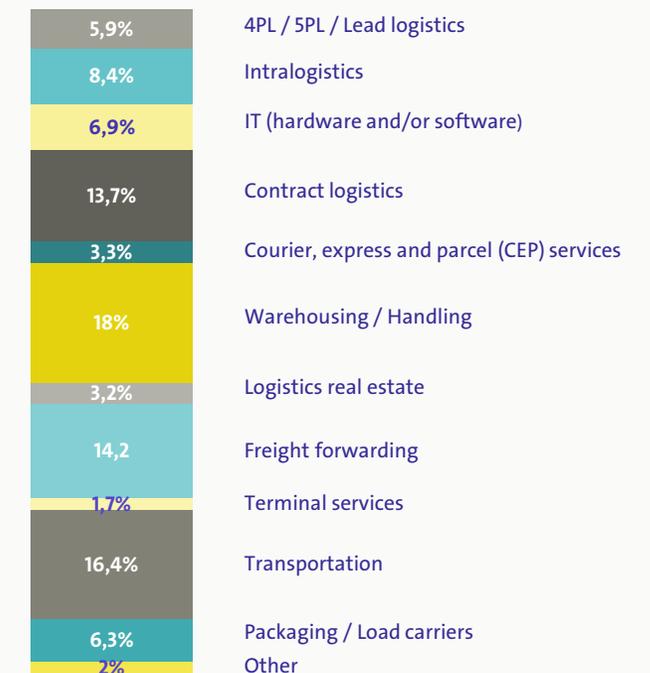
Size of the respondent's company
(based on revenue and employees)



Respondent's current position
within the company



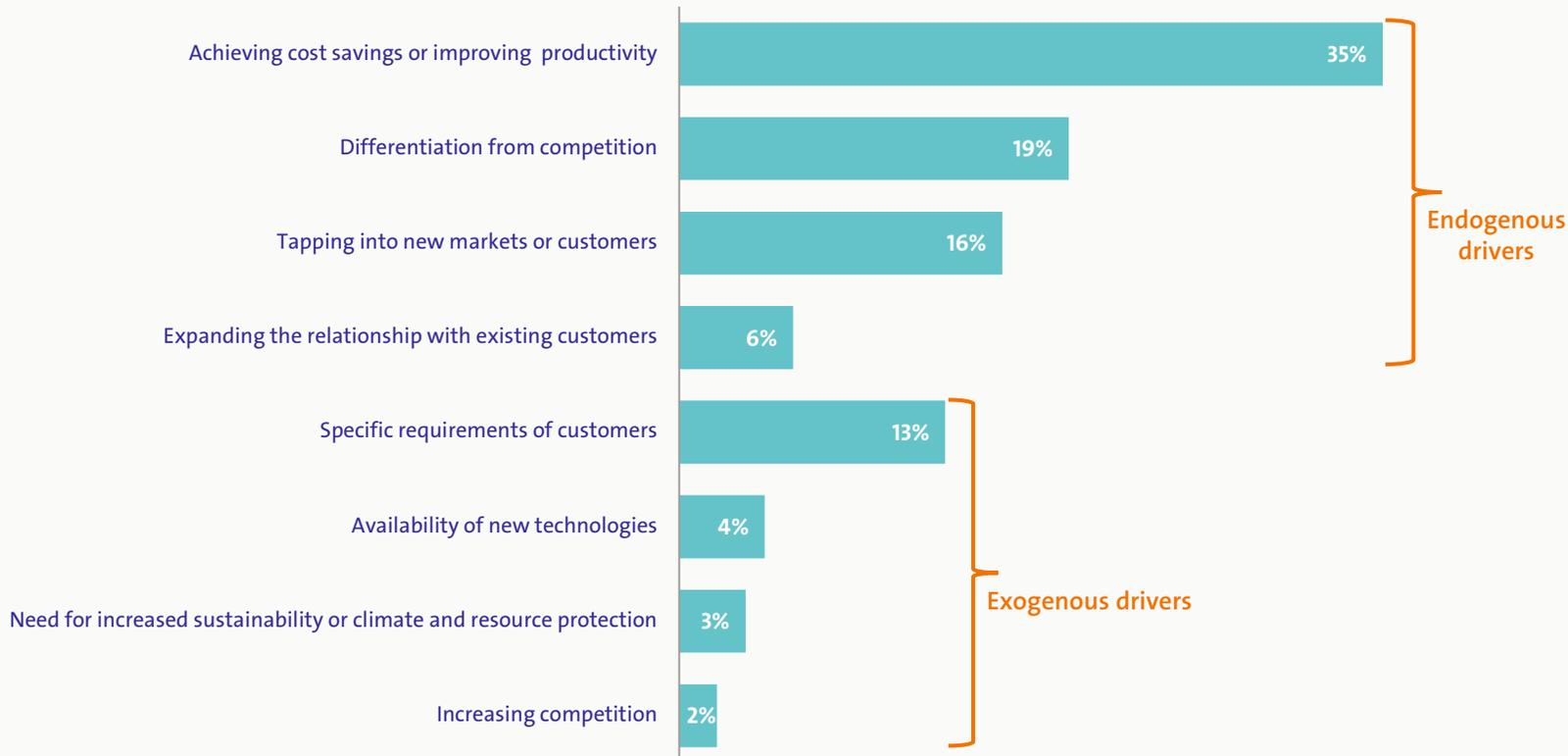
Logistics market segments in which the
companies operate



Following the definition provided by the Federal Statistical Office of Germany, companies employing fewer than 250 people and generating an annual turnover not exceeding €50 million are considered small- and medium-sized enterprises (SMEs). All remaining companies are classified as large enterprises.

Innovations in LSPs are largely promoted by endogenous drivers

What is the primary driver of innovation in your company?



76% of the LSPs surveyed indicate that innovation development is primarily driven by endogenous factors. Consistent with findings of previous studies (Göpfert and Wellbrock, 2014; Schwemmer and Klaus, 2021), the opportunity to achieve operational efficiency gains or realize cost savings seems to remain the predominant factor driving innovations.

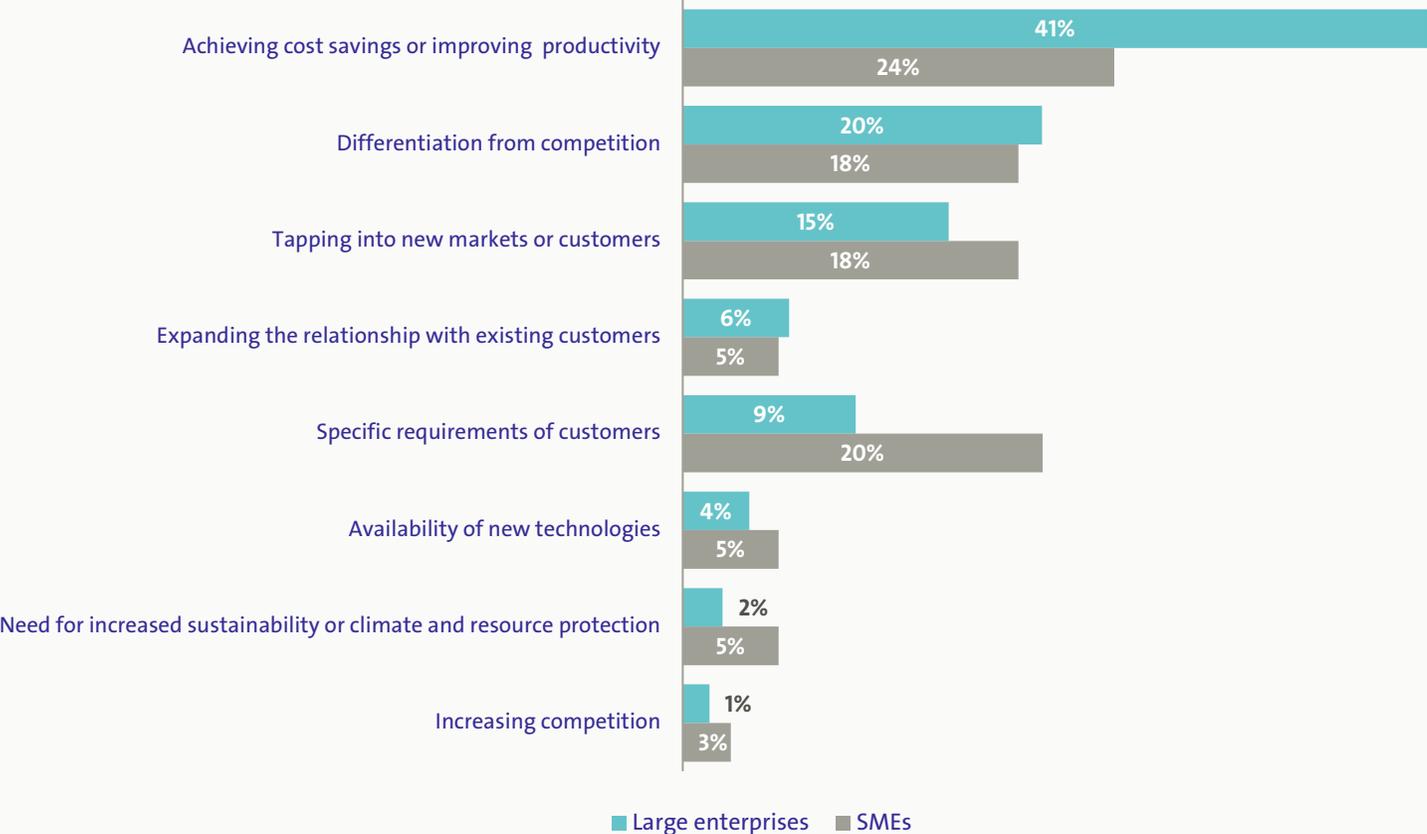
At the same time, however, LSPs increasingly recognize the strategic value of innovations in maintaining or enhancing their competitive position. 35% of the companies surveyed state that innovations facilitate tapping into new markets and actively differentiating them from their competition.

Despite the dominance of endogenous factors, 22% of the LSPs surveyed highlight new service development to be stimulated by exogenous drivers, with specific customer requirements being the most frequently mentioned.

On a final note, the figures illustrate that the mere availability of new technologies does not primarily drive new service development, demonstrating that engaging in innovation is not an end in itself, but is fundamentally expected to boost company performance.

Large enterprises seem to be rather inward-looking, whereas SMEs are more attentive to the customer's voice

What is the primary driver of innovation in your company?



Looking into the differences between company types, the data illustrate that innovation initiatives are much more strongly driven by specific customer requirements in SMEs than in large enterprises. Hence, there is evidence to suggest that smaller LSPs are more agile, open and responsive and consequently better off than large corporations in terms of exploiting customer input for the purpose of new service solutions.

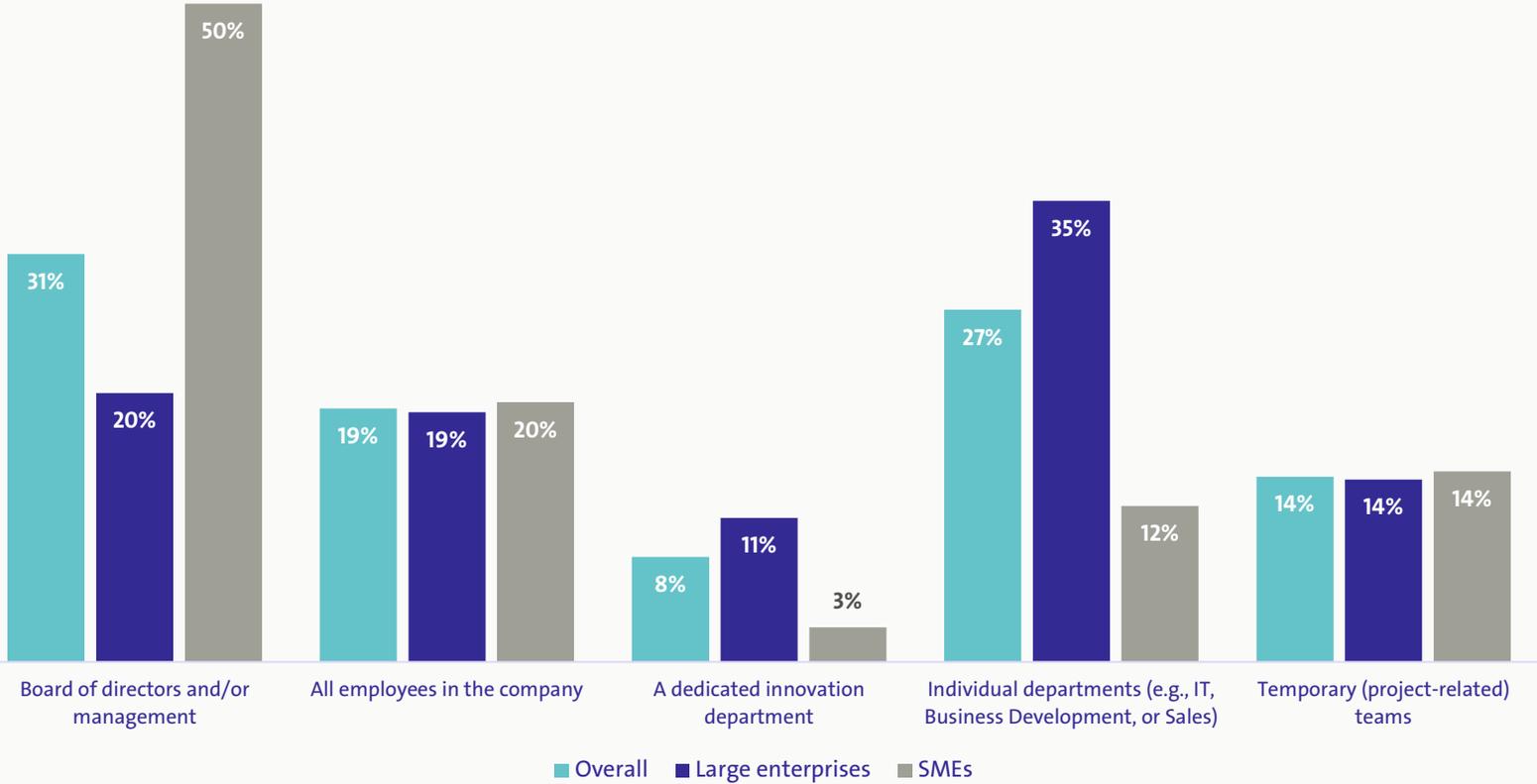
Large-sized LSPs, in turn, adopt a rather inward-looking and more structured approach to innovation much more frequently than SMEs. This approach is geared towards optimizing well-established operations and making current systems more profitable.

Otherwise, only minor deviations between the company types are observed. As such, SMEs are slightly more likely than larger corporations to conceive innovation as a vehicle for tapping into new markets and for responding to the need for increased sustainability.

n=213
 Missing numbers to add up to 100 percent: "Improving the external reputation or image of the company" / "Innovations do not occur in our company" / "Other"

LSPs follow various approaches in terms of where to anchor responsibility for innovation

Who in your company is responsible for the development of innovations?



Overall, 31% of survey participants state that in their companies the development of innovations is to a large extent a top management task. Yet, considerable (but at the same time little surprising) differences exist between SMEs and larger enterprises.

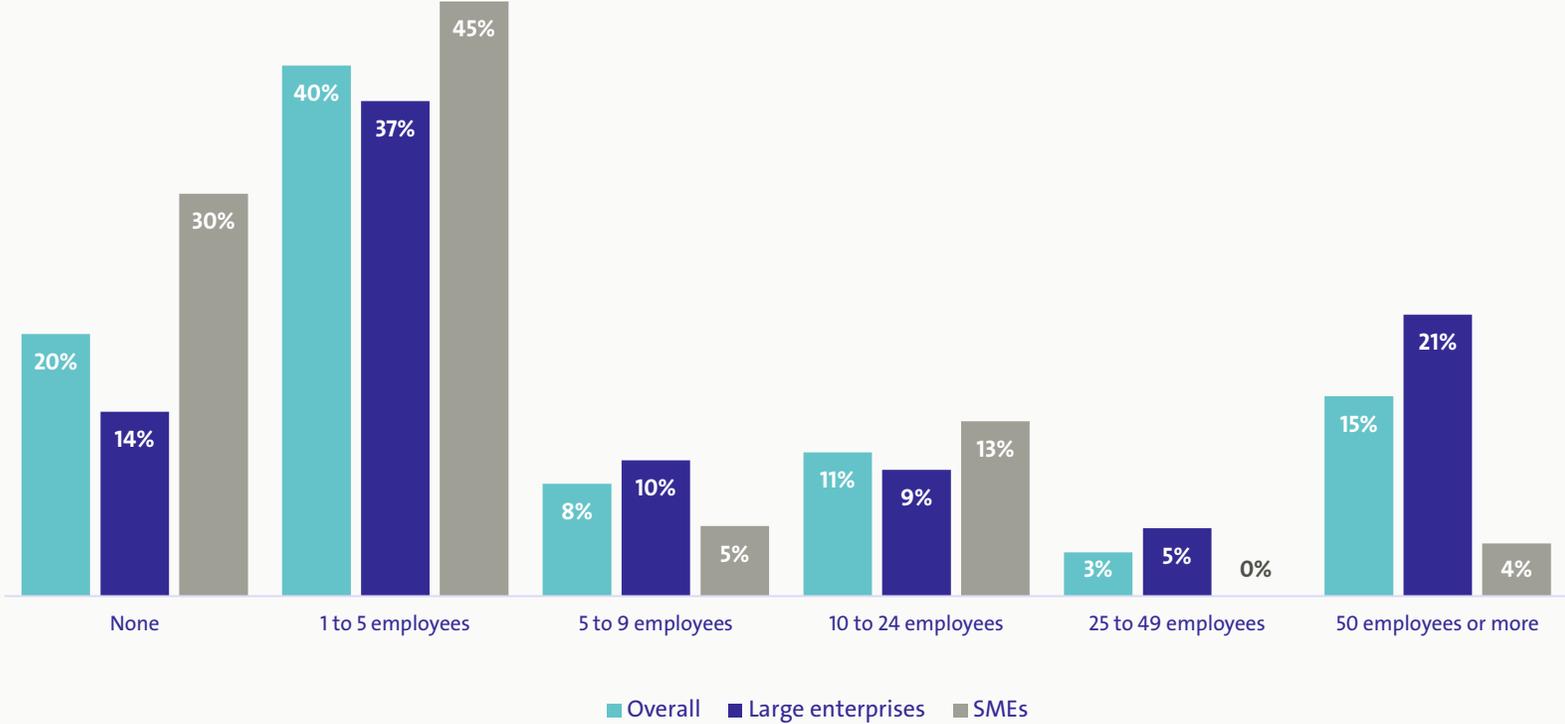
Conversely, 19% of the LSPs surveyed think of innovation development as being a shared or “democratic” task that spans the entire organization and transcends hierarchies, thereby acknowledging that innovations can essentially originate anywhere within an organization.

Only a comparatively small fraction of LSPs operate a dedicated department to drive idea generation and incubate innovation. Whilst this initially appears remarkable, the data seem to corroborate the conclusion drawn by previous research studies that in logistics service provision “centralized R&D departments – as found in manufacturing – are less effective” (Wagner and Sutter, 2012, p. 954). Instead, LSPs are likely to benefit from decentralized structures enabling higher proximity to their clients (Grawe *et al.*, 2014).

n=213
Missing numbers to add up to 100 percent: “External partners” / “Other” / “Nobody” / “I do not know”

LSPs do not dedicate substantial amounts of resources to new service development. Neither in terms of staff...

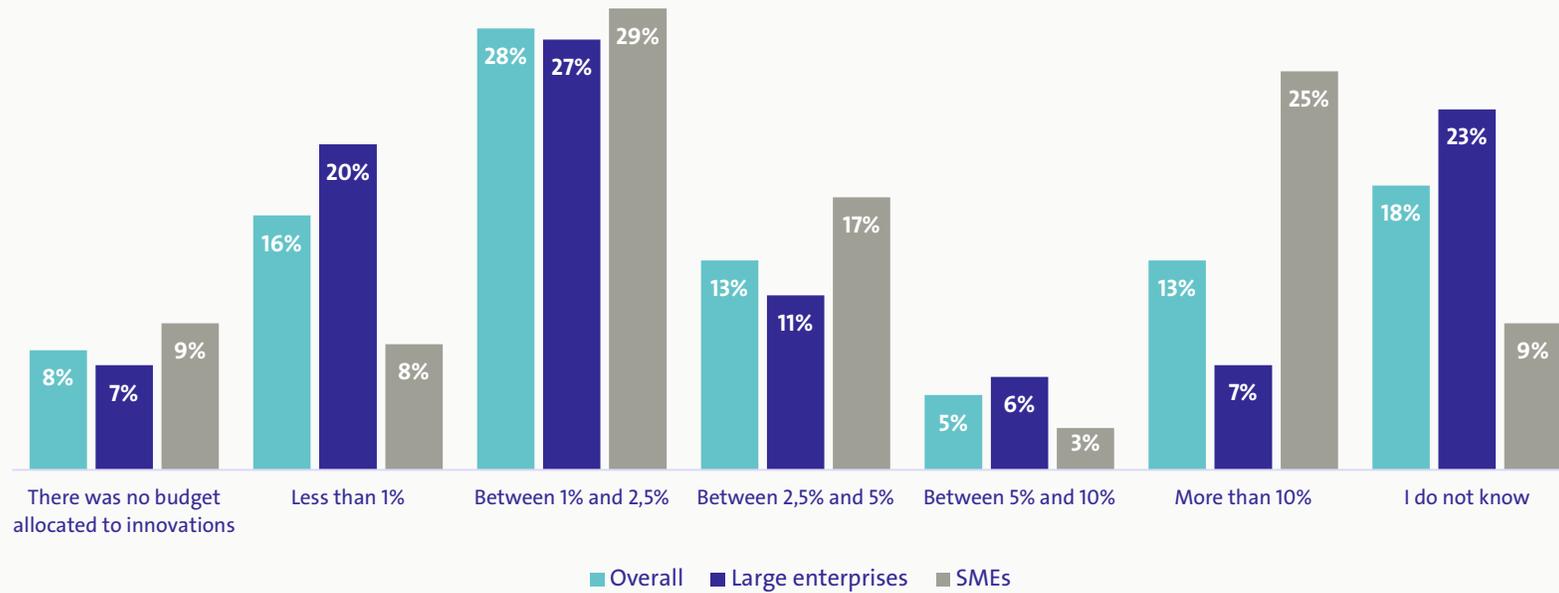
How many employees within your company are engaged in innovation projects for more than 50% of their working time?



60% of the surveyed LSPs indicate that they have five or fewer employees engaged in innovation projects for more than 50% of their working time. The proportion of large enterprises is particularly remarkable and seems to confirm the prevalent notion that even many key players hesitate to dedicate large amounts of resources to the development of innovation. Nonetheless, at least 21% of the large-sized LSPs surveyed report that 50 employees or more are engaged in NSD.

...nor in terms of financial resources

What was the financial budget that your company allocated to innovation initiatives last year (as a percentage of company turnover)?



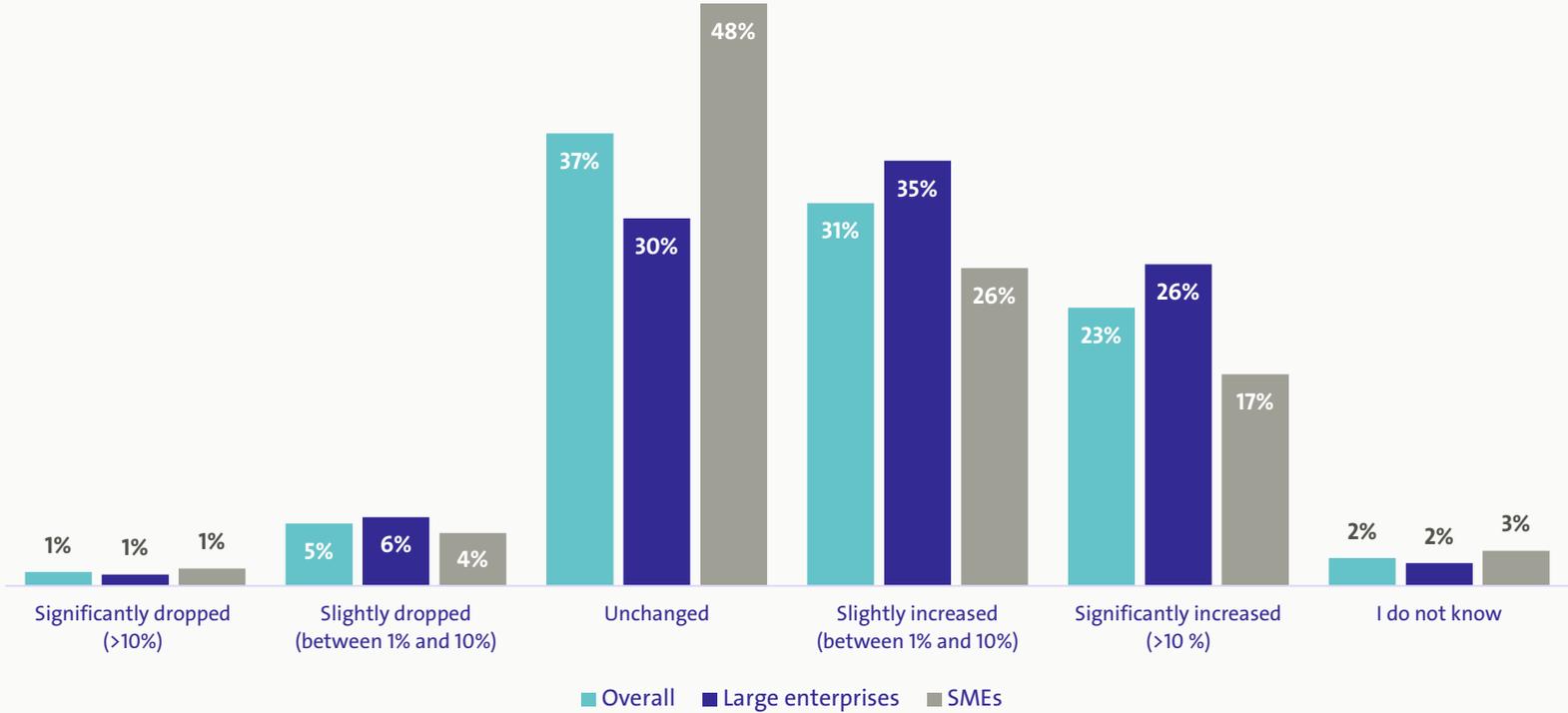
The ratio of innovation expenditures to revenue (“innovation intensity”) in service industries is generally lower than in manufacturing. In 2020, German service firms on aggregate spend 1.7% of their annual revenue on innovation. In contrast, manufacturing firms reached an innovation intensity of 5% (Rammer *et al.*, 2022).

Thus, it does not come as a surprise that the majority of the surveyed LSPs invests a share of less than 2.5% of their annual revenues into innovation activities. In this way, the survey findings confirm the often-voiced view that logistics service provision is still very much a race to the bottom of costs that inhibits substantial investment into new service development.

Contrary to previous research (Göpfert and Wellbrock, 2014), however, the proportion of providers with an annual innovation spend of more than 2.5% of their turnover is comparatively large, suggesting that LSPs have recognized the criticality of innovation for long-term success. Particularly remarkable is that 25% of the participants from SMEs state that 10% or more of their companies’ revenue is spent on innovation.

However, LSPs seem to increasingly appreciate the criticality of investing into innovations

How did the financial budget for innovations in your company develop over the last three years? If you do not know exactly, please estimate.



Whilst LSPs do not operate with R&D budgets in the traditional sense, 54% of the companies surveyed indicate that innovation budgets were increased over the past three years. While 31% of the LSPs scaled up their budgets between 1%-10%, approximately a quarter of the respondents report substantial increases, i.e. >10%. Unsurprisingly, budget growths are more frequently observed in large enterprises than in small- or medium-sized LSPs (61% versus 43%).

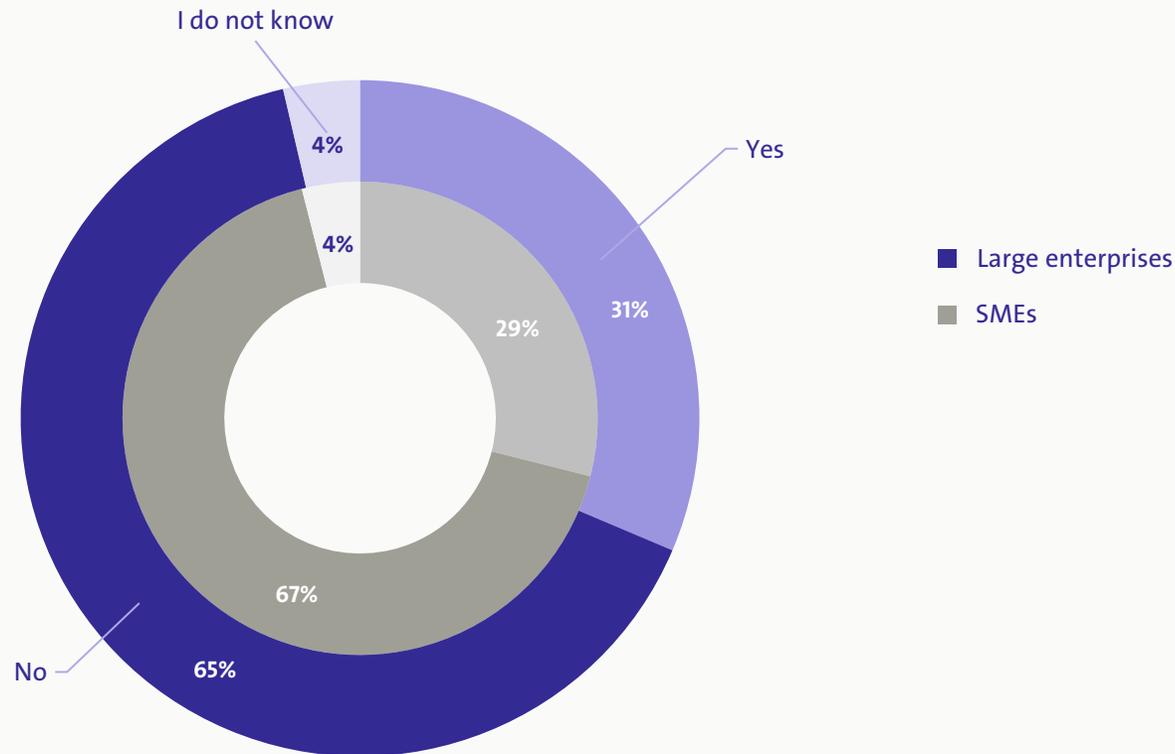
Considering the importance of innovation and digitalization for LSPs, however, it simultaneously comes as surprise that more than 40% of the participants state that their companies' budget for innovations remained unchanged or even decreased. SMEs, in particular, report that their budgets were either not touched or had been cut over the past three years.

**Are the investments of
logistics service providers
into new service
development sufficient
for really pushing
innovation forward?**



Neither many SMEs nor large-sized enterprises rely on a structured process to develop new services

Does the development of innovations in your company – from idea generation to implementation – follow a designated process?



The literature offers several approaches to organize the NSD process. Alam and Perry (2002), for example, propose a model that *inter alia* embraces the activities of strategic planning, idea generation and screening, formation of a cross-functional team, service testing and pilot run, and commercialization. The importance of a structured approach as a success factor for NSD is widely acknowledged. Accordingly, research provides evidence that firms employing a methodical process are more likely to produce successful innovations than firms using random and informal approaches (de Brentani, 2001).

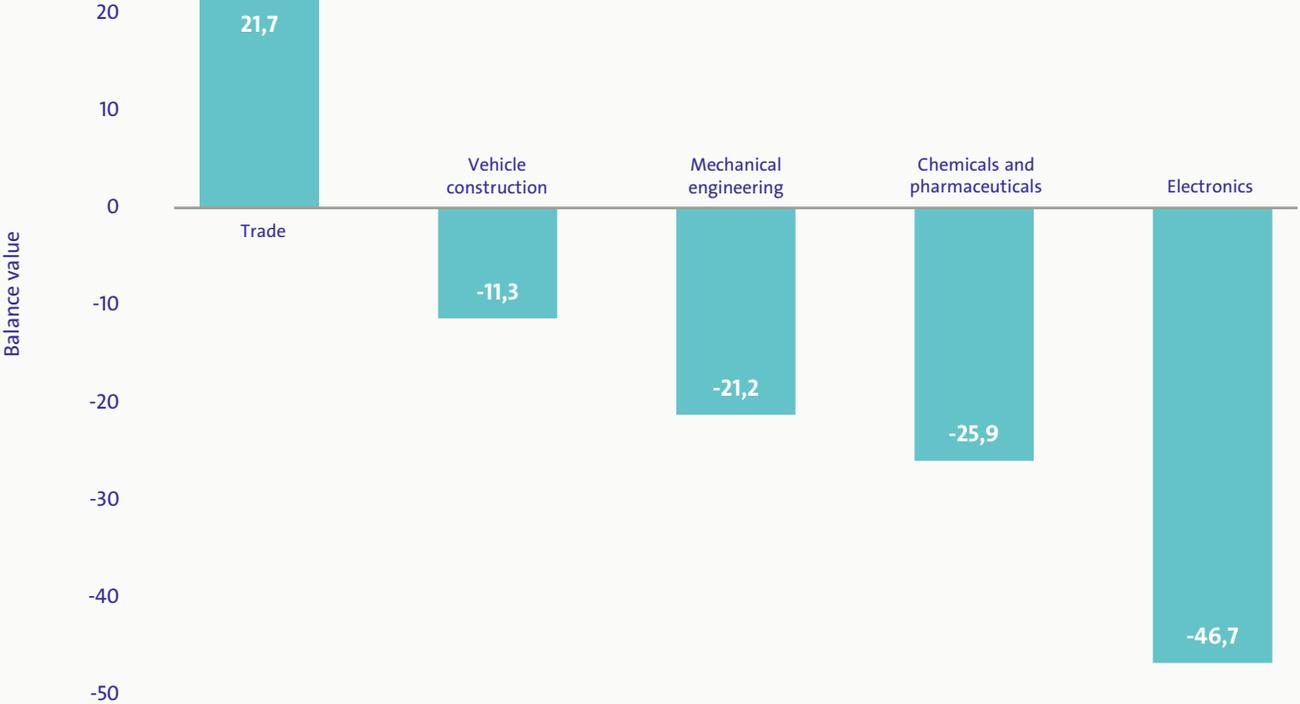
With that said, it is remarkable that a large proportion of LSPs do not base their innovation initiatives on a well-coordinated process. Interestingly, however, an interrelationship between the share of LSPs following a structured NSD approach and the resources made available for innovation initiatives can be observed. Accordingly, 50% of the LSPs spending 5% or more of their annual revenue on NSD report using a designated process, whereas only 27% of LSPs with an innovation budget of less than 5% indicate this to be the case.

Similarly, LSPs with 10 or more employees engaged in innovation projects point to a dedicated process underpinning their NSD activities significantly more often than LSPs with an innovation team of less than 10 people (55% versus 22%).

Rather unsurprisingly, a large proportion (i.e. 71%) of LSPs operating a dedicated innovation team rely on a structured NSD process. On the other end, only 18% of the LSPs in which the responsibility for NSD is delegated to temporary teams report this to be the case.

Compared with manufacturing firms, LSPs do not judge themselves as being very innovative

How innovative are LSPs compared to the following industries?



Compared to manufacturing industries, LSPs paint a consistently negative picture of their own innovativeness. Taking the balance values into account, companies from the electronics industry, in particular, are perceived as significantly more innovative than LSPs consider themselves to be.

The only positive balance value results from the LSPs' comparison with firms from the trade sector, which demonstrates that a large proportion of LSPs perceive themselves to be more innovative than trade companies.

Interestingly, SMEs and large-sized LSPs report similar levels of innovativeness. Only when compared to companies from the chemical and pharmaceutical industries do SMEs rate themselves as less innovative than large enterprises.

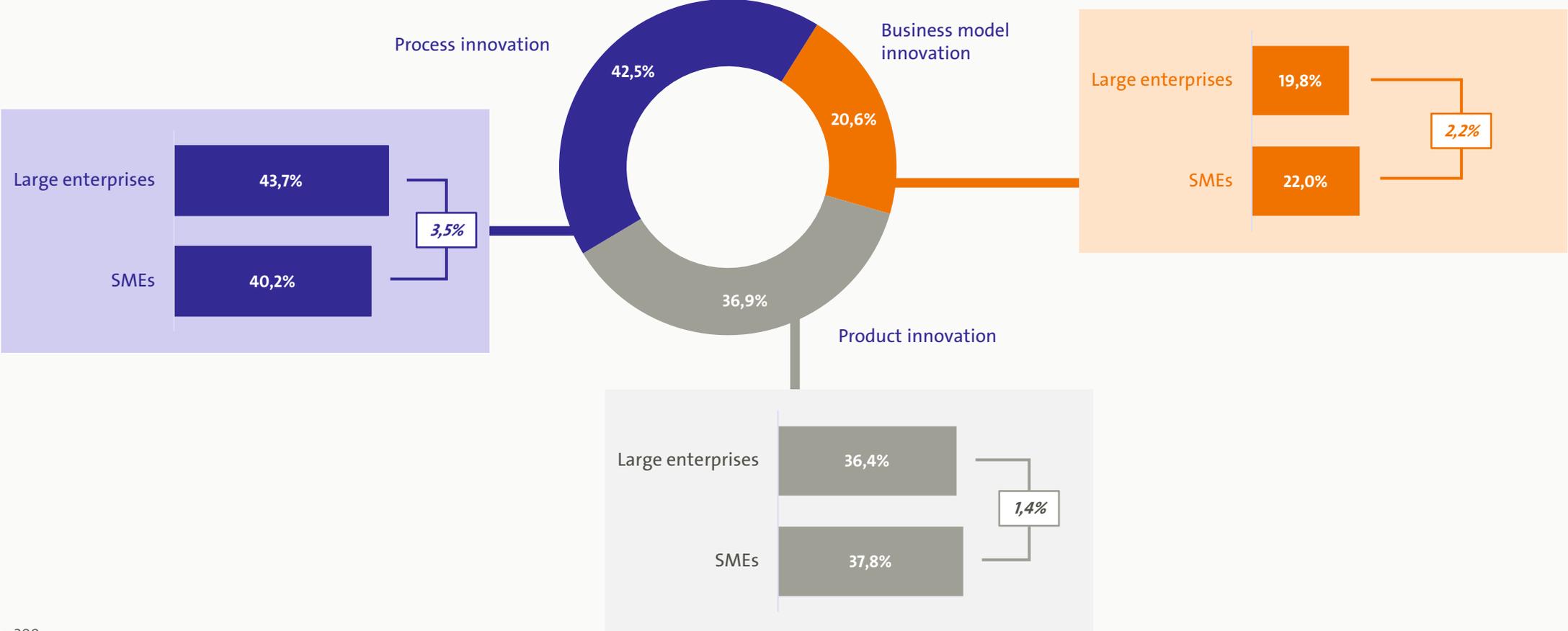


Do companies from industry and trade share the LSPs' (self-) perception? The shippers' assessment of their LSPs' innovative strength is offered on page 38.

118 ≤ n ≤ 157
Respondents could assess their innovativeness in relation to the different industries as either “not at all innovative”, “not very innovative”, “equally innovative”, “innovative”, or “very innovative”. The balance value is calculated as the difference in the percentage shares of the responses “very innovative” / “innovative” and “not at all innovative” / “not very innovative”. The answer “equally innovative” is not included.

The LSPs' primary focus is on process innovation. Service innovations are, however, almost equally important.

How (approximately) are your current company's innovation activities distributed?



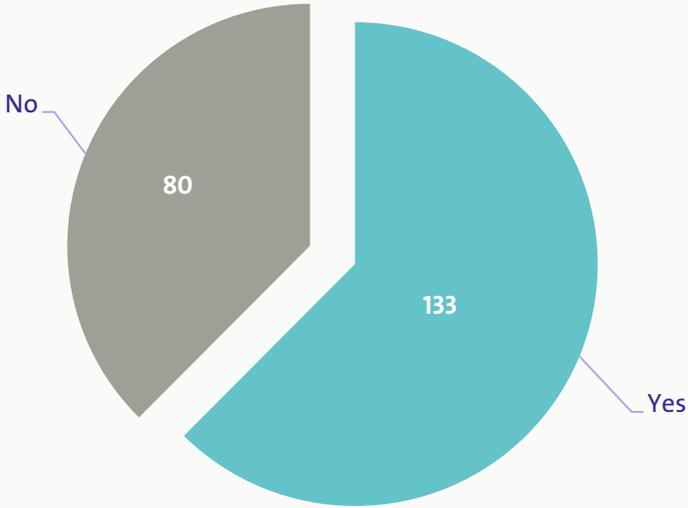
03

Deep dive: How “innovative” are new logistics service concepts?

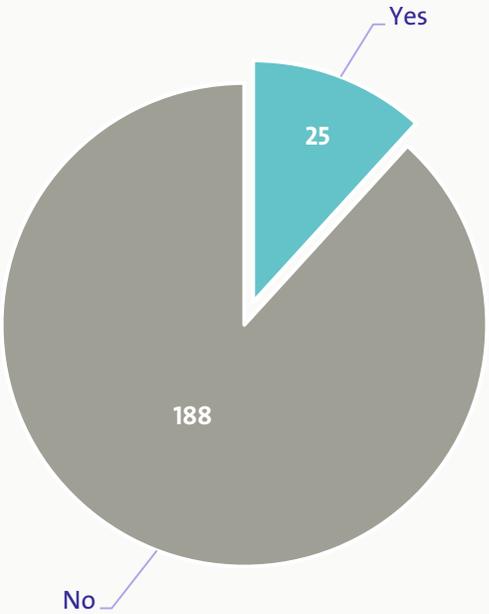


Generally, LSPs seem to be overly risk-averse when it comes to service innovations

Did your company develop and successfully commercialize new logistics services within the last five years?



Within the last five years, did your company develop new logistics services, whose market introduction however failed?



What do you think is the main reason that your company did not develop any new logistics services within the last five years?

Focus on expansion and optimization of existing logistics services

Focus on internal process optimization

No necessity identified

Not in the focus of the company owners

Not a private business, but a public service company

Services already available in the market

Corporate culture – traditional mindset

Other priorities

Focus is on cost efficiency rather than new business models

Very little customer acceptance

Focus predominantly on economic stability

Focus on day-to-day business

Wrong prioritization

Costly development phases

No need as a niche service provider

Developing new services takes a lot of time, expertise and money. These are substantial obstacles

Wrong mindset

Our customers and we do not see the need

Lack of incentives

No demand in the marketplace

New services are not in the focus

Focus on maintaining status quo, no expansion of business

No necessity

Productivity improvements could be achieved more economically by conventional means. Innovation costs would have been higher than the productivity gains.

No

demand

Difficult to implement, as industry is very margin- and price-driven

We only offer “off-the-shelf” services

Focus on internal optimization

Lack of resources

Rigid specifications of our clientele and their inflexibility

Focus is on current business

Company only exists for a year

No dedicated capacity

No specific demand

Optimization of internal processes

No requirement

Focus on customer needs

How “innovative” are new logistics service concepts?

Digital transformation, disruptive business models, technological breakthrough – these are just a few of the many buzzwords currently on everyone’s lips when it comes to innovative logistics service concepts. Yet, the question remains: How innovative actually are logistics innovations?

Interestingly, there is still a dearth of empirical research on how the newness (or innovativeness) of logistics service innovations can be determined. However, the newness of innovations – i.e. the degree of market- and technology-related discontinuity as measured on the micro- (or firm-) and macro- (or industry-) level – is a critically important determinant. Several studies confirm that firms need to pursue fundamentally distinct approaches to new product or service development depending on the “type” of innovation they intend to achieve. This not only applies to tangible products. Research conducted by de Brentani (2001, p. 181), for example, demonstrates that also in services “radically different types of new product ventures require a different approach to achieving new product development success.”

With that said, this study replicates the innovativeness framework developed by Avlonitis *et al.* (2001) for new financial services to determine how innovations developed by LSPs can be classified according to their newness, thereby closing a reasonably established gap in the extant literature. Moreover, the results allow for valuable practical insights. On the one hand, conclusions can be drawn on the newness of logistics service innovations introduced during the past couple of years. On the other, the reader is provided with a taxonomy based on which future service concepts can be assessed in terms of their innovativeness.



Methodological approach

The research data were collected from the service provider side using a key informant approach. Compliant with the original study, the respondents were asked to briefly describe two new logistics services introduced within in the past five years and to judge them based on seventeen items related to different facets of micro- and macro-level newness. The responses were measured on a Likert-type scale ranging from 1 (“strongly disagree”) to 5 (“strongly agree”).

In total, 160 cases of logistics service innovations were collected. To reveal whether these can be arranged into different types, the data were initially inspected via principal component analysis (PCA) to examine whether the survey variables can be aggregated into a more manageable number of dimensions of innovativeness. Thereby, possible issues resulting from the inclusion of highly correlated items were prevented (Hair *et al.*, 2019). Performing a PCA with varimax (orthogonal) rotation on the thirteen variables deemed factorable and retaining all factors with an eigenvalue ≥ 1.0 yielded a five-factor solution accounting for 64.3% of the total variance.

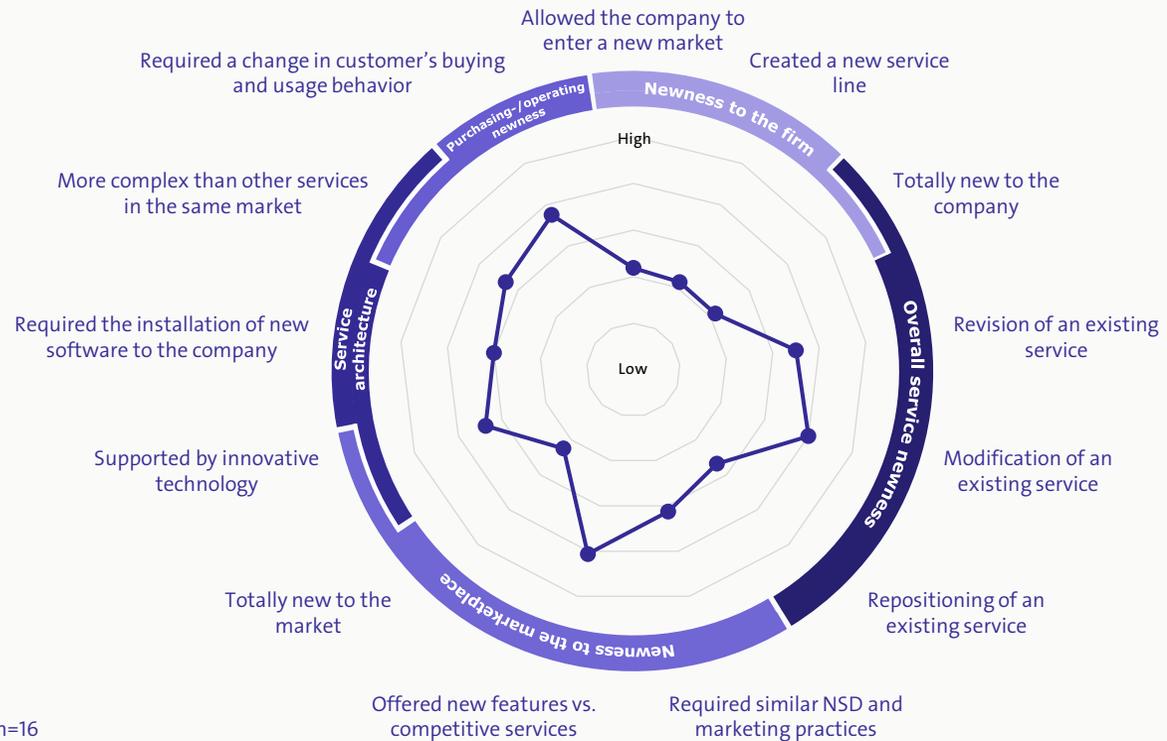
The first factor describes the *overall degree of innovativeness* of a new service measured in terms of the “similarity between the new product and those already marketed by the firm” (Atuahene-Gima, 1995, p. 279). As such, inferences can be drawn on whether the new service is a modification, revision or repositioning (and hence rooted in the firm’s current service portfolio) or entirely new to the firm. The second factor refers to the *service newness from the customer (or macro level) viewpoint*. Thus, it mirrors the newness of the practices employed by the innovating firm to market the service and of the features and technological advancement that are offered

vis-à-vis already available services. The third factor covers the *market-related newness on the micro level*, i.e. from the perspective of the developing firm. The fourth factor reflects the newness of the new service based on the extent to which it required the installation of new software within the firm and embodied innovative technology. In addition, it captures the complexity of the service compared to other services in the marketplace. Thus, the factor represents the *newness of the service architecture* encompassing both the micro- and macro-level dimensions. Finally, the fifth factor reflects the *purchasing- and operating-related newness* of the new service and hence another dimension of macro-level newness.

After deletion of three extreme data points, a hierarchical (Ward’s method) combined with a non-hierarchical (*k*-means) cluster analysis was run on 157 new logistics service cases using the factor scores of the five factors of innovativeness as input variables (Punj and Stewart, 1983). To determine the optimal number of clusters, different cluster solutions were carefully examined in terms of their intra-cluster homogeneity, inter-cluster distinctiveness, and conceptual meaningfulness. Eventually, a six-cluster solution appeared to be the “best-fitting” solution.

On the next slides, each cluster is portrayed in further detail based on its mean scores on the thirteen original variables. Moreover, the individual clusters are linked back to the LSPs’ responses on how innovations are managed and developed in order to derive possible interrelationships.

Cluster 1 | Logistics service modifications



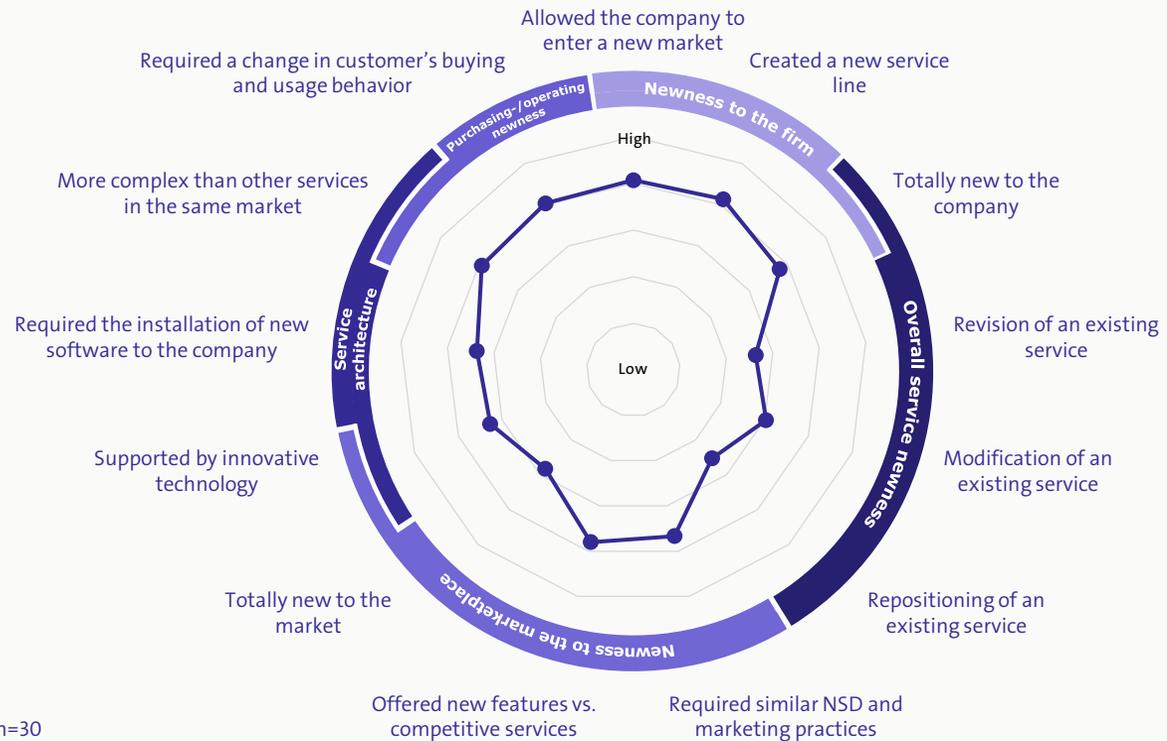
The first cluster of logistics service innovations is characterized by a below to average level of almost all dimensions of newness. As such, the related services exhibit but a moderate degree of newness to the marketplace, which finds expression in the fact that the associated variables are consistently underrepresented. Likewise, the newness of the technical architecture of the services in this clusters is not highly developed.

Looking at their overall newness, it becomes apparent that the services in this cluster are largely built based on pre-existing service concepts, as particularly reflected in the strongly overrepresented variable “Modification of an existing service”. In this sense, it comes as little surprise that the company-related newness level is not very pronounced. The mean scores of the variables constituting this dimension are statistically significantly lower than the means of all other clusters on these items. Taking these typological characteristics into account, it is therefore reasonable to argue that the services in this cluster can best be described as **logistics service modifications**.

Logistics service modifications are predominantly developed by LSPs with the following characteristic attributes:

Annual turnover	Number of employees	Share of firms having an innovation process in place	Who is responsible for innovation?
€249 million or less	2.499 or less	25%	All employees in the company

Cluster 2 | New service lines



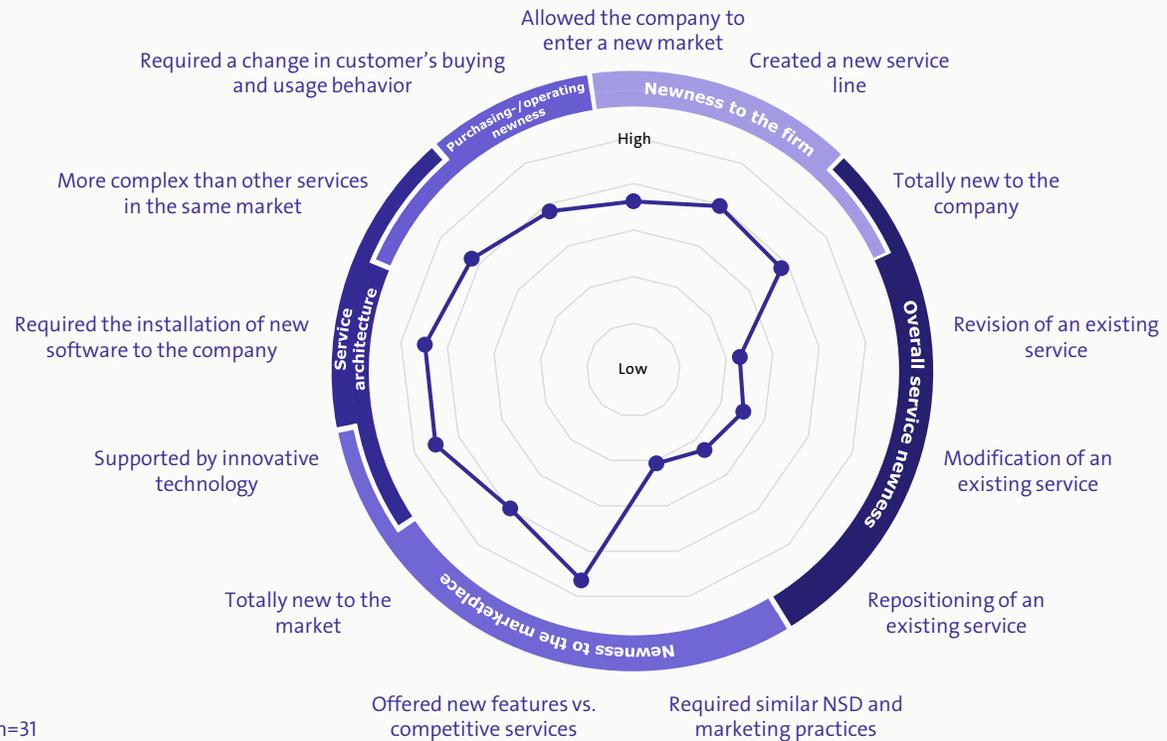
From the profile diagram, one can infer that the second innovation type coincides with service modifications in several ways, especially in terms of its newness to the marketplace and its technical architecture. It also possesses an almost equally highly developed purchasing- and operating-related newness.

What makes this innovation type distinct from service modifications, however, is its overall service newness. The mean scores of the variables determining whether or not the associated services relate to existing company offerings suggest that this tends not to be the case. Thus, it comes as no surprise that the service innovations in this cluster exhibit a comparatively high degree of newness to the innovation-developing firm. Given these salient features, it is concluded that the services in this cluster closely resemble **new product (service) lines** as originally proposed by Booz, Allen and Hamilton (1982).

New service lines are predominantly developed by LSPs with the following characteristic attributes:

Annual turnover	Number of employees	Share of firms having an innovation process in place	Who is responsible for innovation?
€249 million or less	2.499 or less	27%	Board of directors and/or management

Cluster 3 | Radical logistics service innovations

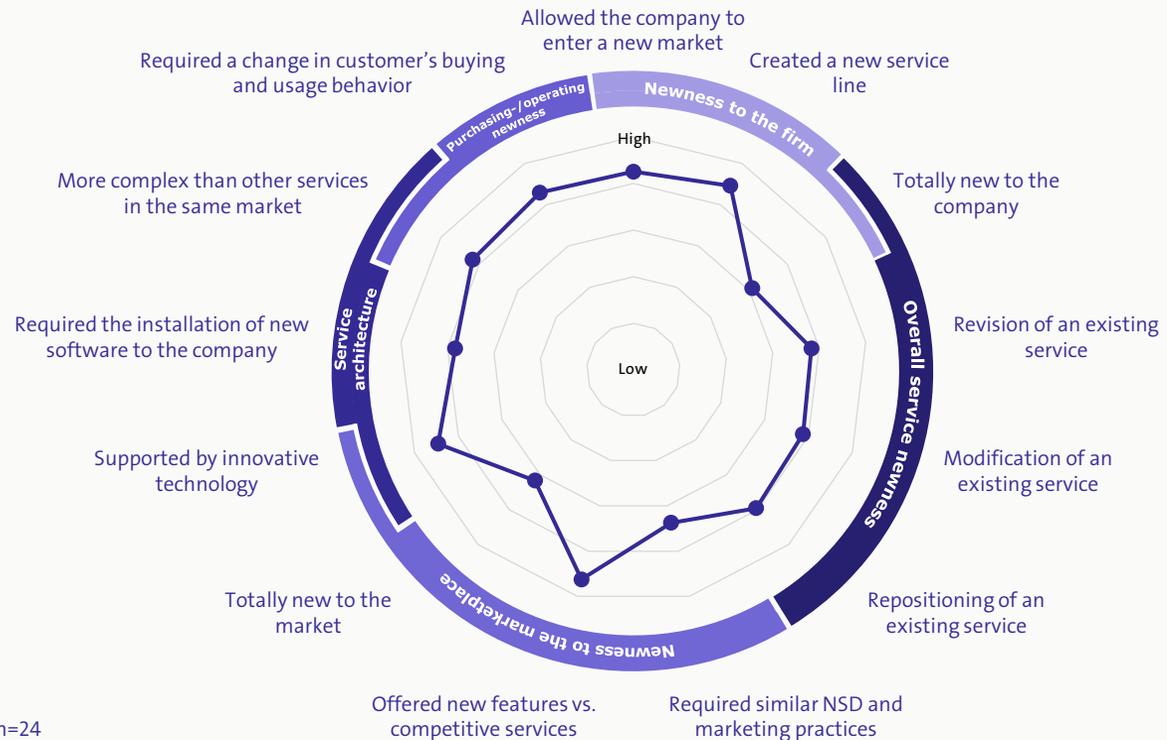


The services in the third cluster exhibit a higher-than-average degree of newness in all five dimensions of innovativeness. First, the low mean scores on the variables that measure the extent to which the innovations in this cluster have predecessor services in the innovation-developing firms illustrate that this is evidently not the case. Consequently, the services in this cluster are reasonably new to the firm. Second, compared to the other innovation types revealed in this study, the services in this group further possess the highest mean scores on several variables reflecting the degree of newness related to the marketplace and of their technical architecture. Third, the innovative nature is mirrored in the mean scores of the variables associated with the purchasing- and operating-related newness. Based on this, it is reasoned that the criteria mentioned in the research literature (Atuahene-Gima, 1995; Daneels and Kleinschmidt, 2001; Green *et al.*, 1995) are sufficiently fulfilled for the services in this cluster to be considered **radical logistics service innovations**.

Radical logistics service innovations are predominantly developed by LSPs with the following characteristic attributes:

Annual turnover	Number of employees	Share of firms having an innovation process in place	Who is responsible for innovation?
€1 billion or more	20.000 or more	43%	All employees in the company

Cluster 4 | Radical logistics service repositionings



Radical logistics service repositionings are predominantly developed by LSPs with the following characteristic attributes:

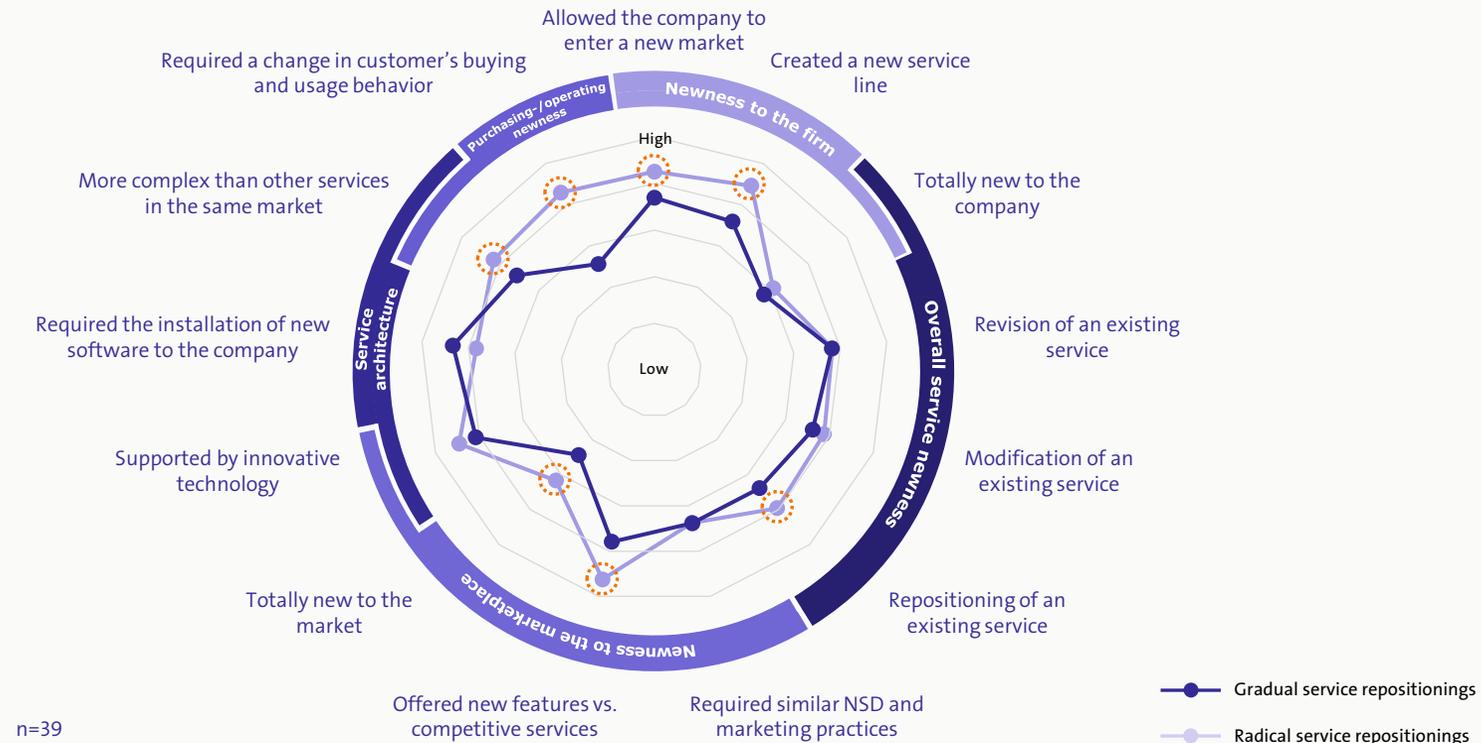
Annual turnover	Number of employees	Share of firms having an innovation process in place	Who is responsible for innovation?
€10 million or less	99 or less	42%	Board or directors and/or management

The newness to the marketplace of the services in this cluster can be described as moderate and largely comparable with new service lines. The level of newness of the service to the firm, in turn, appears to be fairly substantial given the scores of the associated variables.

Analyzing the overall level of newness, however, it becomes apparent that creating new service lines and tapping into hitherto unserved markets is facilitated predominantly by repositioning existing company products. Interestingly, the profile diagram shows that the services are not simply repositioned, but that this is accompanied by substantial service reconfigurations, involving mainly technology-related improvements as well as the installation of new software within the firm.

Taking the cluster's characteristics into account, ample evidence exists to assume that the services in this cluster are very much comparable with an innovation type referred to by Corstjens and Doyle (1989) in the context of retail management, namely **radical service repositionings**. According to the authors, these facilitate “a major, discontinuous shift into new target markets and/or competitive advantages” and “an innovative leap into new market segments” (Corstjens and Doyle, 1989, p. 172), which also seems to pertain to the service innovations in this cluster.

Cluster 5 | Gradual logistics service repositionings



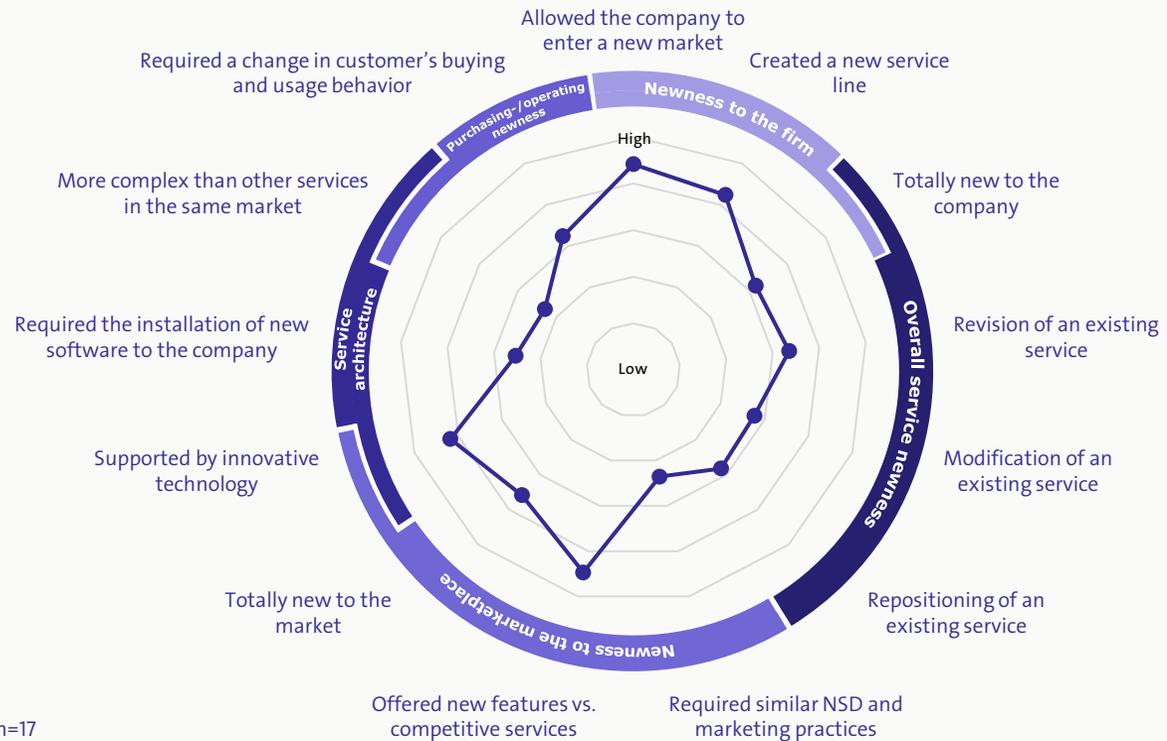
The profile diagram for this innovation type looks remarkably similar to that for radical service repositionings, and one could understandably argue that the conceptual difference between the clusters may be too narrow for partitioning them into separate classes. Despite the similarity in the shape of the cluster profiles, however, the post hoc test run to compare both classes revealed that the predominant numbers of variables differ in their mean values. While the difference is not statistically significant in all instances, it nonetheless seems to be plausible to consider the services in this cluster as being a distinct and less drastic type of service repositioning.

In this way, the present research again ties in with the work of Corstjens and Doyle (1989), who likewise make the case that repositioning a product can take alternative forms and vary in intensity. The authors hence introduced the term **gradual repositioning** to describe more “regular, generally small, adjustments the firm makes (...) to maintain a continuous match between the requirements (...) and its own offer” (Corstjens and Doyle, 1989, p. 171).

Gradual logistics service repositionings are predominantly developed by LSPs with the following characteristic attributes:

Annual turnover	Number of employees	Share of firms having an innovation process in place	Who is responsible for innovation?
€249 million or less	2.499 or less	40%	Individual departments

Cluster 6 | New-to-market logistics services



One can certainly argue that the features of the services in this cluster are somewhat contradictory. On the one hand, the related services are equipped with comparatively innovative technologies and allow firms both establishing new product lines and tapping new target markets. Moreover, they exhibit a comparatively high degree of marketplace-related newness, which deviates only marginally from that of radical logistics service innovations.

On the other hand, the cluster's profile illustrates that, within the innovation-developing organization, the services as such are not considered markedly new. Therefore, the services in this cluster are reasonably proposed to represent **new-to-market logistics services**.

New-to-market logistics services are predominantly developed by LSPs with the following characteristic attributes:

Annual turnover	Number of employees	Share of firms having an innovation process in place	Who is responsible for innovation?
€24 million or less	249 or less	24%	Board or directors and/or management

Service modifications include:

Sampling of pharmaceutical raw materials under clean room conditions	Same day delivery for selected items in selected zip code areas
Route-planning and pre-loading concepts	Automated truck loading
New booking system	Emission-free deliveries
Fleet management to optimize costs for the customer	Preferred delivery day
Customized assembly and packaging	Supermarket for Kanban-controlled consumables in vehicle construction

New service lines include:

E-commerce fulfillment centers	New combined transport connections
Container train connections in seaports	China rail services
Li-ion battery storage concept	Integration of CEP service providers for track and trace purposes
Consulting services	Two-man home delivery service
Rental furniture logistics and disposal of old furniture	Industrial parts cleaning
City logistics	Two-stage dynamic picking system

Radical service innovations include:

Customer supply chain risk assessment and prediction	Logistics services for the social commerce market in Asia
Connecting sensor data from machines to plan spare parts requirements	Services to create more transparency in the supply chain using data analytics, AI and IoT
Data science as a service	TMS for last mile delivery
Shipment visibility platform	Artificial intelligence for supply chain planning, optimization and automation
Integrated (fully digital) chemical logistics	

Radical repositionings include:

B2C solutions for storage and distribution of building materials and DIY products	Android devices as scanners
Pick-to-light with laser	FTF for in-house transport with centralized control system
Transport drone for industrial users	Automated stocktaking with drones
Seamless passive cold chain transports	SaaS platform for urban logistic
Swap body inspection via drones	Cloud-based warehouse management with
Automatic industrial trucks for intralogistics	Transport services (C2C business)

Gradual repositionings include:

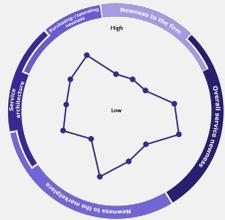
ETA as a service	Logistics planning & optimization services integrating real-time event handling, prediction and machine learning
SC Visibility for the oil and gas market	Platform for glass transportation contracting
4PL solutions (control tower services)	SMART tank container (tracking & tracing)
Software for custom deliveries	Real time freight brokerage
Online freight forwarding platform	E-commerce fulfillment with high levels of IT integration
Virtual stocktaking	
Automated on-board courier solutions	

New-to-market services include:

Digital marketplace	Temporary renting of large medical equipment to hospitals
Automation technology as a service	Freight procurement SaaS
Booking platform	Pick-by-vision with data glasses
Tracking solutions	New intralogistics services
Smart entry accepted by all service providers	Sorting systems for e-commerce
Lightweight mega-trailers with special equipment for the paper industry	

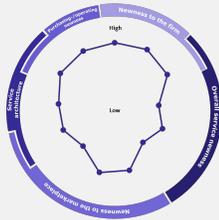
Summary

1 Service modifications



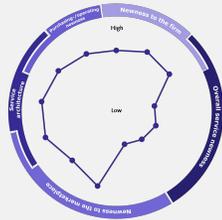
Exhibits the lowest degree of newness. As such, the services are neither new to the market nor to the developing firm, but closely linked to already existing services.

2 New service lines



Largely comparable to service modifications but characterized by a disproportionally high degree of newness to the company.

3 Radical service innovations



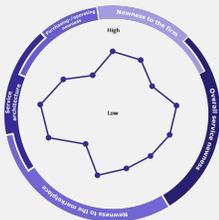
Characterized by a substantial degree of newness along every single facet of innovativeness.

4 Radical service repositionings



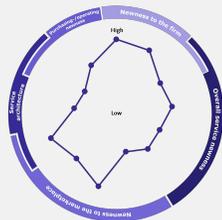
Facilitate firms to tap into hitherto unserved markets or market segments. The services are not newly developed, however, but build heavily on current products.

5 Gradual service repositionings



Generally, largely comparable with radical repositionings. However, on almost every facet the degree of newness is less highly developed.

6 New-to-market services



Embody a high-degree of technology- and market-related newness and enable firms to tap new markets. The services as such are moderately new to the firm and fairly detached from current offerings.

The implications of the derived taxonomy are twofold. From a theoretical viewpoint, it represents an important step towards a better understanding of logistics service innovations and lays the groundwork from where more innovation-type specific research can depart. Based on five factors of innovativeness, **new logistics services can be classified into different types of service innovations**: *Logistics service modifications* are located at the least innovative end, whereas *radical logistics service innovations* represent the most innovative type of new services. The four remaining groups of logistics service innovations fall between these extreme innovation types.

At the same time, the findings suggest that **it is not always possible to judge from its characteristic features whether an innovation type is more or less “new” than another**. While their attributes appear to be sufficiently disparate to place most innovation types into a plausible sequence, it remains to be seen where on the incremental-radical continuum new-to-market services are to be positioned. Thus, the question arises as to whether thinking of innovativeness in the form of a continuum is always desirable.

Perhaps the most important finding from a practical perspective is that **LSPs are indeed capable of creating radically new logistics service concepts**. The survey data, however, suggest that predominantly large-sized LSPs employing a structured NSD approach are in the position to produce this type of innovation. Innovations embodying a lower degree of newness, such as modifications or new service lines, are, somewhat unsurprisingly, developed primarily by small- or medium-sized LSPs. Interestingly, the findings suggest that, in these cases, **an organized NSD process was not decisive for innovation success**.

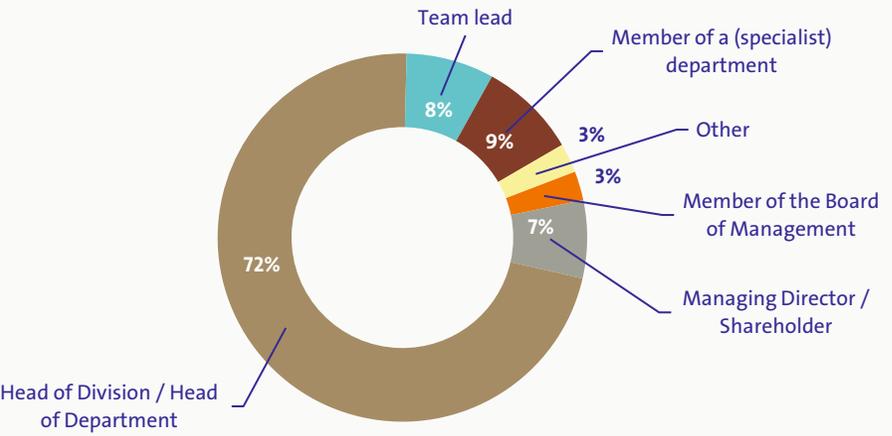
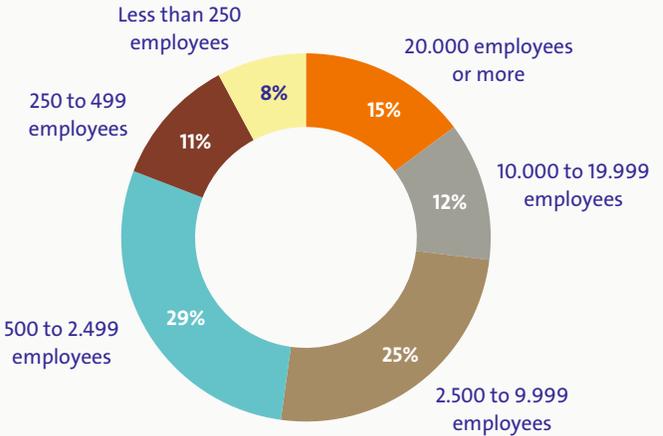
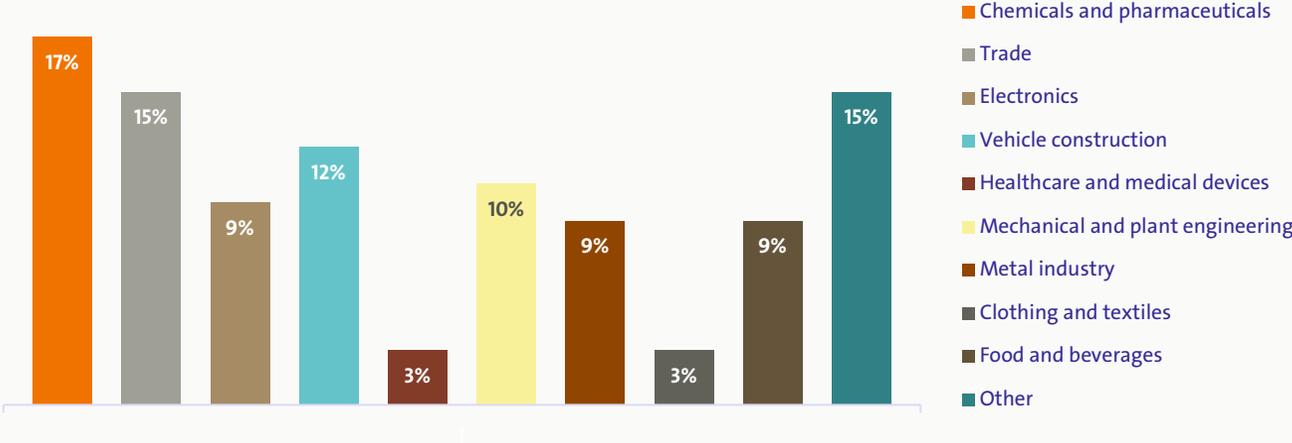
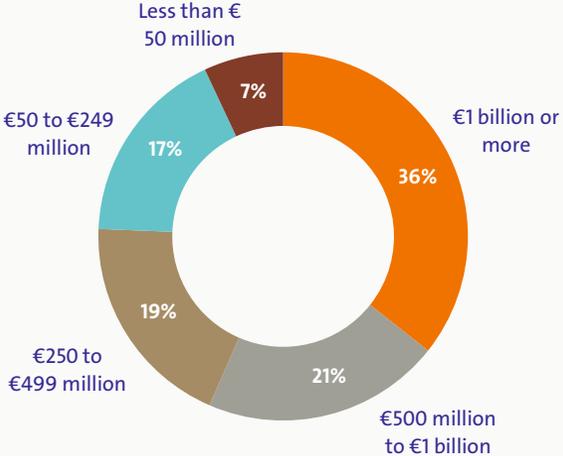
Finally, it is outlined that the innovativeness of logistics services was exclusively assessed from the LSP's perspective. There may, however, be differences in perception between a service provider and its clients, particularly with regards to the marketplace-related newness of new logistics services. This should be taken into account in future research addressing this topic.

04

Logistics innovations from the shippers' viewpoint

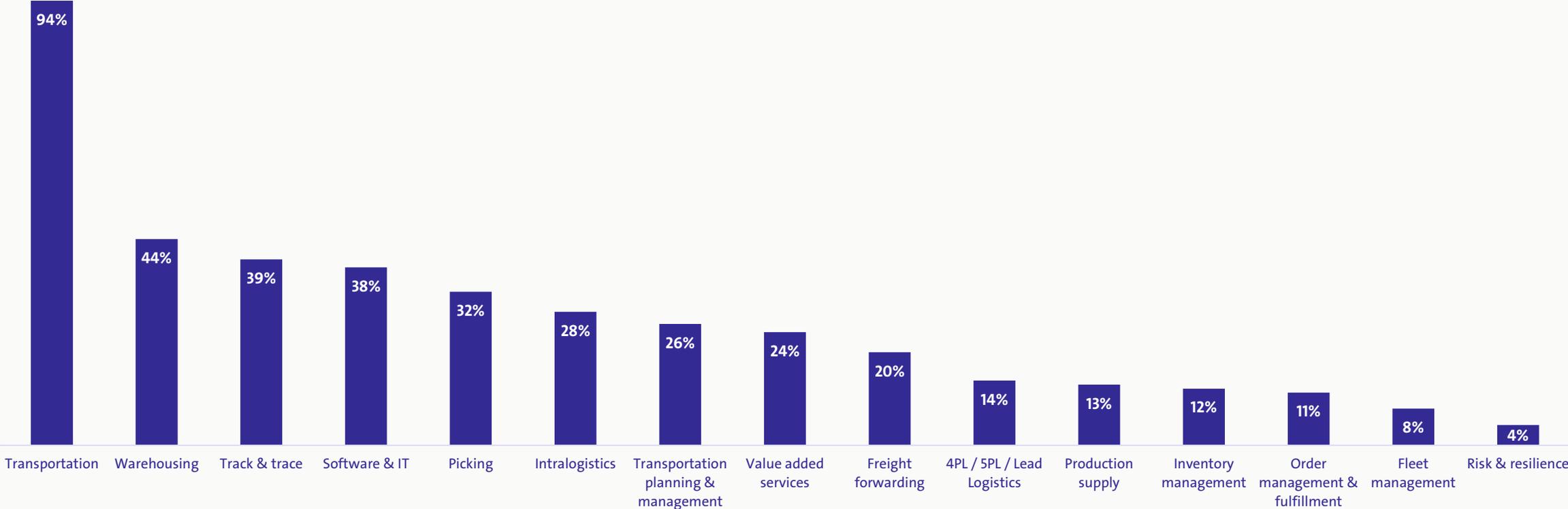


117 logistics and SCM experts from manufacturing and trade companies shared their view on logistics innovation



Make or buy?

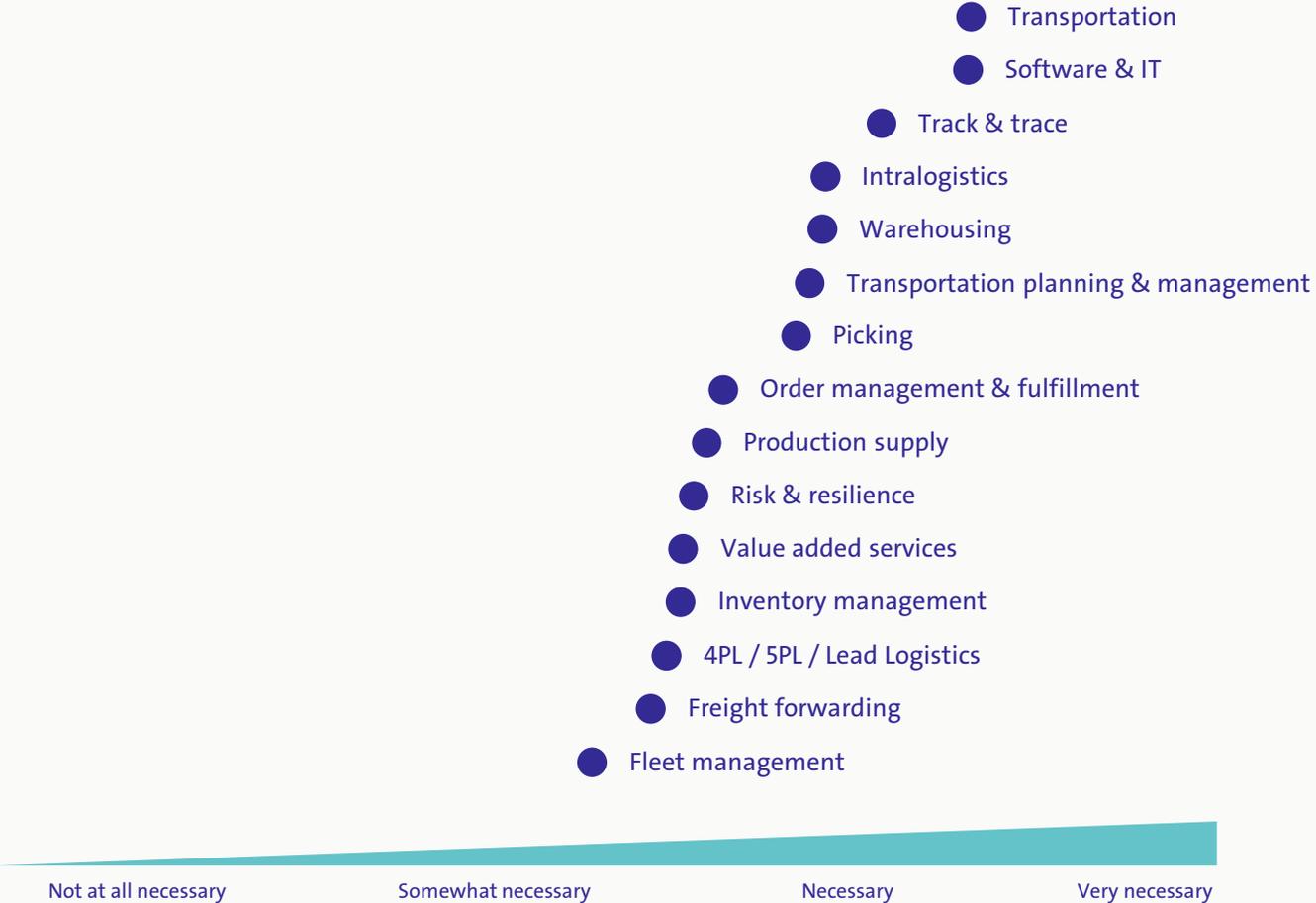
How intensively do you collaborate with service providers in the following areas?



n=117
The diagram includes the aggregated percentage shares of the responses “Quite a bit” and “Very much”. The responses “Not at all”, “Slightly”, and “Moderately” are not included.

Shippers deem innovations to be particularly necessary in the areas of Transportation and Software & IT

How do you rate the future necessity of logistics innovations in the following areas?



Generally, the shippers’ responses demonstrate a clear need for more innovation. Aside from “Software & IT”, shippers indicate innovations in the field of “Transportation” to be of top priority. Considered almost equally indispensable are innovations in the areas of warehousing, picking, and intralogistics, notwithstanding the recent advancements made in these segments in terms of digitization and automatization.

Recalling the unprecedented supply chain disruptions during the Covid-19 pandemic as well as the current multitude of other crises, shippers unsurprisingly demand novel services to enhance tracking and tracing goods along supply chains. At the same time, however, it is somewhat remarkable that innovations in the closely related domain of “Risk and resilience” are reported to be comparatively less urgent.

With the advent of digital freight forwarding companies, the freight forwarding segment has experienced considerable transformation in the recent years. Nonetheless, shippers still see a need for more innovations in this area, albeit not as pressing as in other segments.

Indeed, more research taking a more granular perspective is required to better understand why and where (within each segment) more innovations are deemed necessary. Nonetheless, the overview provides a good estimation for LSPs regarding their clients’ possible future needs.

What importance do shippers attach to the criterion “innovation” when selecting a logistics service provider?

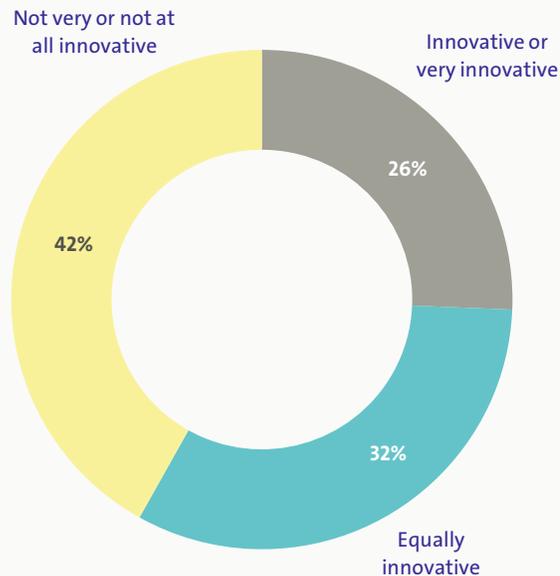
Ultimately, a large proportion of shippers do not put innovation high on the priority list when selecting LSPs



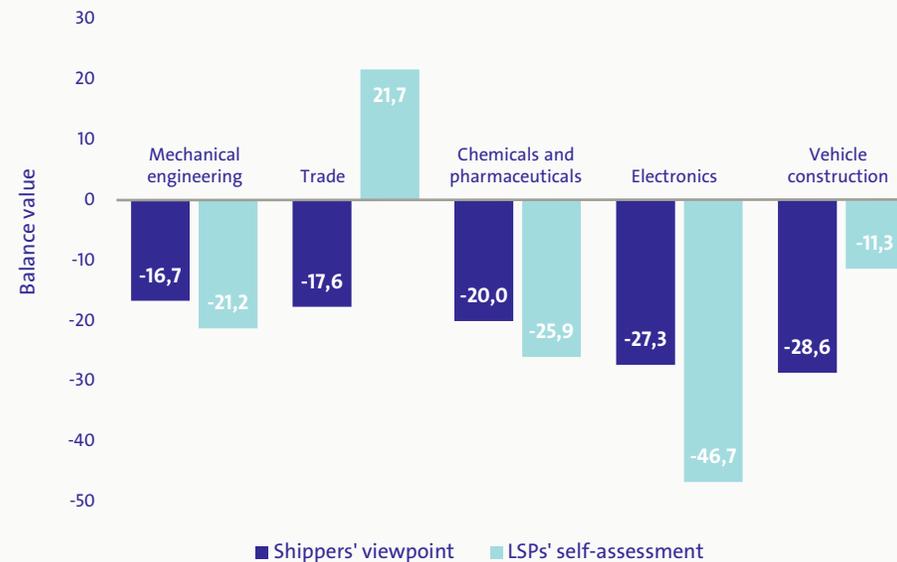
The innovative strength of LSPs as perceived by the client

In your opinion, how innovative is the logistics industry compared to the following industries?

Overall



Industry-specific analysis



Generally, shippers tend to perceive their LSPs as not very innovative, even though the responses reveal that only 3% of the companies surveyed judge their LSPs to be not at all innovative. At the same time, however, LSPs are ranked as very innovative in equally few instances by their customers.

Taking a closer look at the individual industries allows for interesting conclusions to be drawn, especially in consideration of the previously reported LSPs' self-assessment. What becomes particularly apparent is that the perspective of trade companies on their providers' innovativeness substantially contrasts with the LSPs' own judgment of their innovativeness in relation to the trade sector. Similar discrepancies can be observed in relation to the automotive companies' perspective on their LSPs.

However, these differences likewise occur the other way around. Despite an overall rather negative picture, companies from the electronics sector, in particular, believe LSPs to be more innovative than LSPs consider themselves to be (-27.3 versus -46.7).

n=117

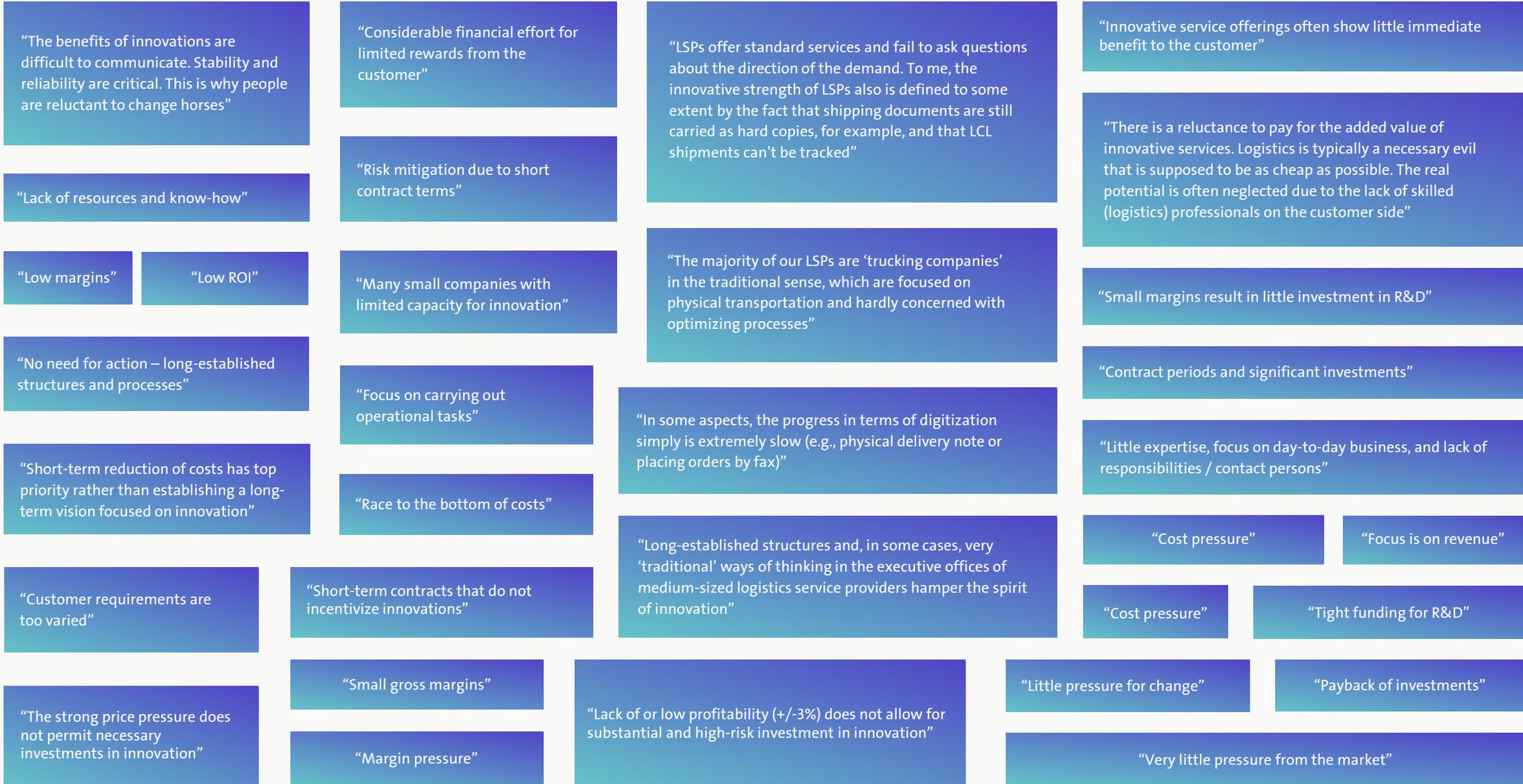
The balance value illustrating the innovativeness of LSPs from the shippers' perspective is calculated as the difference in the percentage shares of the responses "very innovative" / "innovative" and "not at all innovative" / "not very innovative". The answer "equally innovative" is not included.

The industry-specific analysis is based on low case numbers (11 ≤ n ≤ 20).

**(Why) do logistics
service providers
notoriously underrate
their own innovative
strength?**

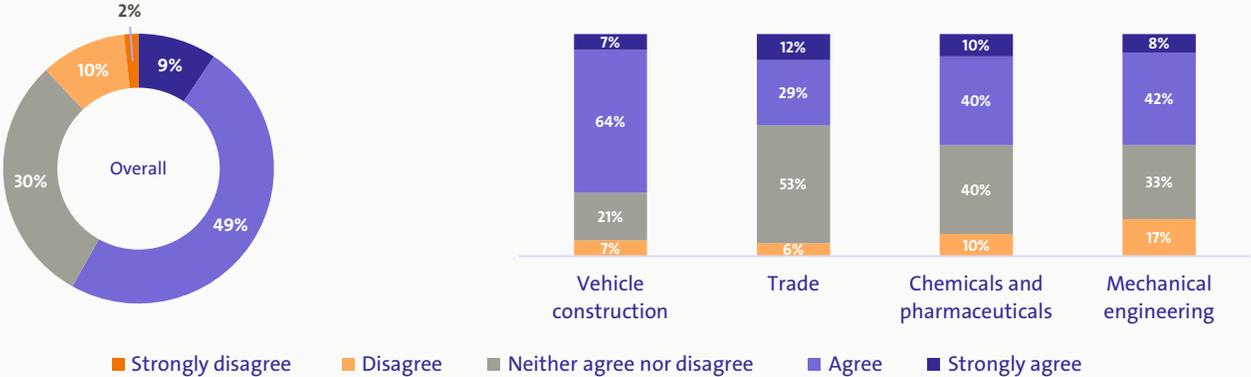


If you indicated that LSPs are not very or not at all innovative, what do you believe is the main reason for this?



Logistics innovations seem to emerge largely based on a unidirectional approach

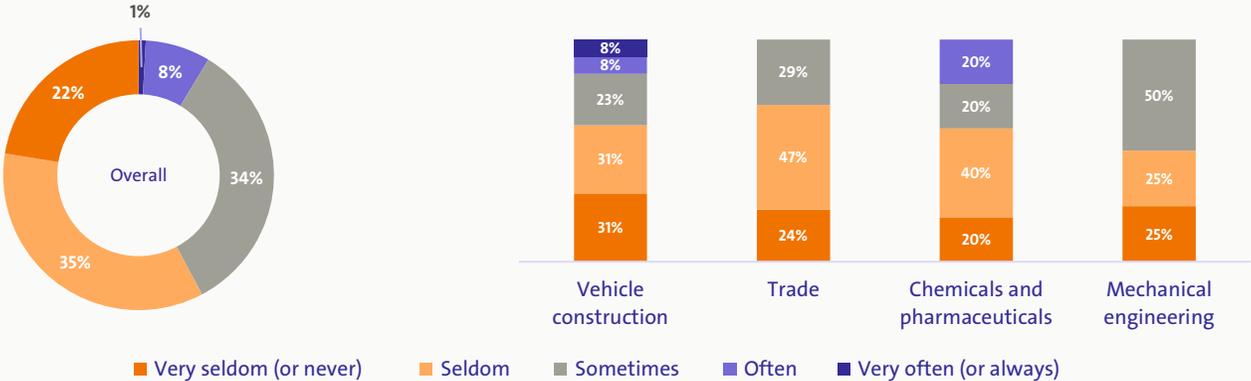
To what extent do you agree with the following statement: “Developing innovations is the task of the LSP!”



58% of the surveyed firms consider the development of innovations the responsibility of their LSPs. Only in 12% of cases do the respondents disagree with the statement that developing new services is the responsibility of the LSP, suggesting that innovations rely to a large extent on co-creation.

The industry-specific analysis reveals that companies from the automotive industry, in particular, are much more strongly inclined than companies from other industries to see LSPs in the role of the “innovation developer”. 71% of the automotive companies (strongly) share the view that the LSP should be responsible for driving innovation.

How frequently are you involved in innovation initiatives of your logistics service provider(s)?



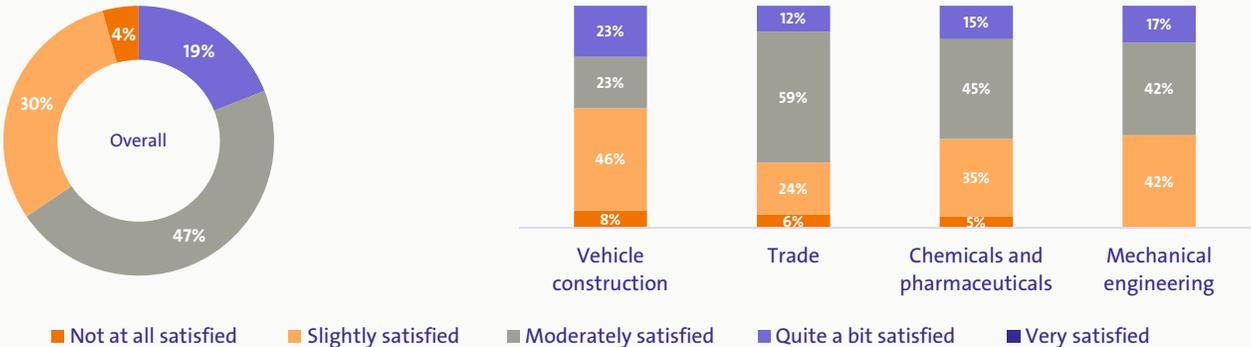
The notion that innovation is the task of the LSP could at least partially explain why shippers are often not involved in innovation initiatives developed by their providers. While the positive effects of integrating clients into innovations are evident (Thomke and von Hippel, 2002), LSPs to a great extent forgo the opportunity to tap into a valuable source of innovation-relevant knowledge, insights, and ideas. Accordingly, only 9% of the shippers indicate to be often or very often involved in innovation projects developed their LSPs.

The industry-specific assessment reveals marginal differences regarding the frequency with which LSPs integrate their shippers into innovation initiatives. While companies from vehicle construction and chemicals appear to be involved more frequently than companies from trade or mechanical engineering, the proportion of shippers indicating that they are seldom or very seldom (or never) invited by their LSPs to share their input does not differ substantially across industries.

n=117
The industry-specific assessment is based on low case numbers (12 ≤ n ≤ 20)

Shippers are not impressed by their LSPs' levels of innovation commitment

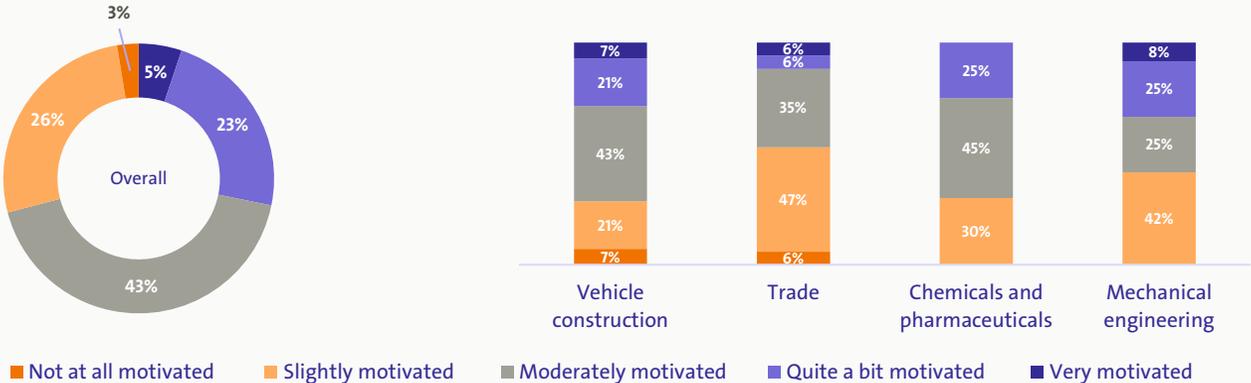
How satisfied are you generally with your LSP(s) in terms of generating logistics innovations?



The shippers' satisfaction with their LSPs in terms of generating innovative solutions seems to be largely moderate, but with a tendency toward lower scores. Accordingly, 34% of the shippers state that they are not at all or slightly satisfied, whereas only 19% of respondents are quite a bit satisfied. Remarkably, none of the 117 respondents reported high levels of satisfaction.

Compared to other industries, automotive companies are less satisfied with their LSPs' performance in terms of generating innovations. More than 50% were not at all or only slightly satisfied, which significantly exceeds the total average satisfaction value.

In your opinion, how motivated is (are) your LSP(s) to develop innovations?

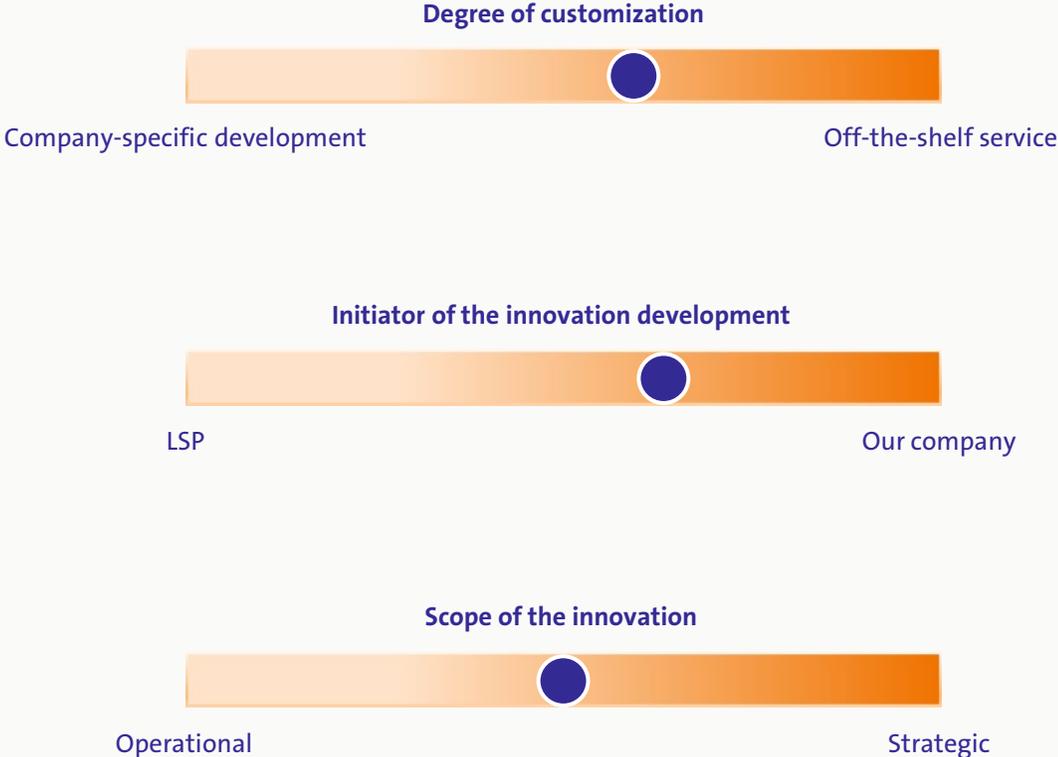
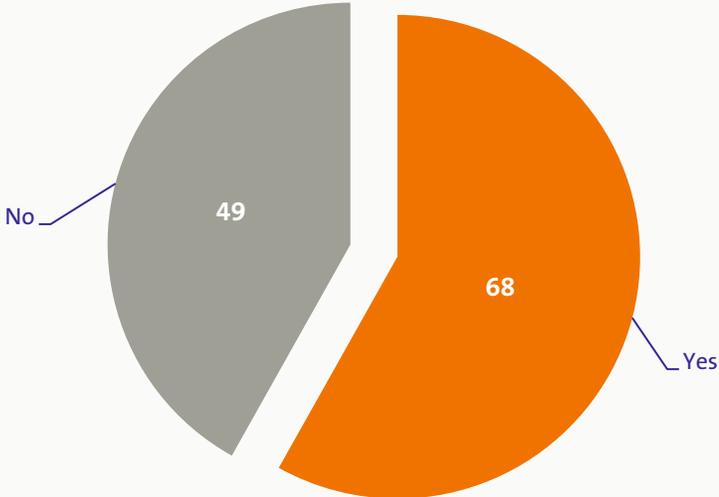


With that said, it comes as little surprise that most shippers find that their LSPs show rather moderate levels of motivation when it comes to new service development. As few as 28% are of the opinion that their LSP is quite a bit or very motivated. Looking at individual sectors, companies from trade, in particular, seem to be particularly unhappy with their LSPs' motivation. Accordingly, more than 50% of the participants rate their LSPs as only slightly or not at all motivated.

n=117
The industry-specific assessment is based on low case numbers (12 ≤ n ≤ 20)

The basic characteristics of a logistics service innovation from the client's perspective

Did your company make use of innovative logistics services within the last five years?



05

Conclusion



Conclusion

Besides providing a taxonomy for logistics service innovation, the present report painted a detailed picture of the current state of innovation in LSPs. Recalling the questions posed in the introductory section, the findings of this study can be summarized in five key points:

1. LSPs still allocate a rather low amount of financial and human resources to the development of new service concepts. Moreover, the survey findings show that NSD in most LSPs is not associated with a methodical and structured process. The potential for innovation in the logistics industry is huge. To exploit this potential, however, **LSPs must become much more aware of the need for sustained investments and a more systematic approach to push innovation forward.**
2. The majority of **LSPs innovates with the aim to achieve cost savings or increase efficiency.** The true value of innovation in tapping into new markets and actively differentiating from competition has not yet been widely recognized.
3. LSPs themselves – as well as manufacturing and trade companies regularly buying in logistics services – do not perceive the logistics industry as very innovative. At the same time, however, the survey results show that **LSPs should be more self-confident.** The LSPs' self-image of their innovativeness is often worse than their shippers' assessment. Moreover, the taxonomy of innovativeness provides evidence that LSPs are certainly capable of developing new services positioned at the extreme end of the incremental-radical continuum of newness.
4. LSPs seem to be strongly directed toward “playing safe” and minimizing the risks associated with NSD. On the one hand, this is fairly understandable, given the comparatively limited amounts of available resources. Nonetheless, **successful innovation requires the courage to try out ideas, even if success is not guaranteed.** Particularly for more radical innovations, **establishing a “failure culture” and the capability of learning from mistakes is key.**
5. Eventually, a mindset shift is also required on the side of the shippers! Companies from manufacturing and trade report that innovation is needed in almost every logistics market segment. At the same time, most shippers consider the development of innovations to be exclusively the task of the LSPs. Yet, value-adding innovations that have the potential to substantially enhance the shipper's own competitive position do not emerge within the isolated environment of the LSP. Instead, **partnership, open communication, and readiness to remunerate innovation initiatives appropriately are essential, but are still far from being reality.**

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