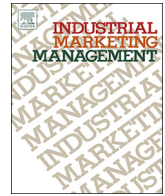




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Is your industrial marketing work working? Developing a composite index of market change

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ABSTRACT

We define market work as purposeful efforts by a focal actor to perform and transform markets and focus on the connection between market work and market change. To enable an evaluation of the effectiveness of market work, we delineate the domain of market change and provide an operational definition of its elements and develop a composite index of market change. Our research process consisted of four steps: (1) Specification of the elements of market change; (2) Specification of indicators for the identified elements; (3) Reliability and validity assessments; and (4) Validating the market change index. We identified six elements of market change. Markets can be changed by changes in Products & Price, Customers & Use, Channels, Supply-side Network, Representations and Norms. In the qualitative phase of the study we identified at total of 22 facets of these elements, which were later developed into 25 indicators. The overall model was operationalized as a formative first-order, formative second-order model, where first-order elements are formatively measured latent constructs that form a more abstract general (second-order) latent construct - market change. The research process involved testing the reliability and validity of the model and the final market change index.

1. Introduction: the connection between market work and market change

Recent research in strategic management and entrepreneurship suggest that markets should not be viewed as a given and deterministic context, exogenously to the firm (Priem, Butler, & Li, 2013). Instead, firms are increasingly conceptualized as active creators of market opportunities (Alvarez & Barney, 2007; Sarasvathy, 2008). Some authors even suggest that firms can reap so-called influence-rents, “extra profits earned by an economic actor because the rules of the game of business are designed or changed to suit an economic actor or a group of economic actors” (Ahuja & Yayavaram, 2011, p. 1631). The outcome from a managerial point of view is that markets (and opportunities) are not precursors of strategy, but rather outcomes of deliberate and designed actions, thus inviting firms to engage in activities aimed at shaping markets (Kindström, Ottosson, & Carlborg, 2017) to generate market innovations (Kjellberg, Azimont, & Reid, 2015) that support value creation, growth and profitability.

Such actions can, based on the ‘turn to work’ literature in management and strategic organization (Phillips & Lawrence, 2012), be labelled “market work”, which we define as *purposeful efforts by a focal actor to perform and transform markets*. Market work fulfills the characteristics of “work” identified by Phillips and Lawrence (2012),

namely it involves actors engaged in a purposeful effort to manipulate some aspect of their context, and it highlights that actors engage in constructing elements that were previously seen as beyond the control of individual actors.

There are many important research avenues related to market work, covering the whole process from understanding the antecedents for engaging in market work, generating categorizations of market work activities, and examinations of the outcomes of market work. Previous studies have mostly focused on the description and categorization of market work, exemplified by institutional boundary-work (Palmer, Medway, & Warnaby, 2017), constructing and contesting markets (Finch & Geiger, 2011); segmentation as market construction (Harrison & Kjellberg, 2010), shaping markets through use (Harrison & Kjellberg, 2016) and through purchasing (Ulkuniemi, Araujo, & Tähtinen, 2015), performativity of market practices (Kjellberg & Helgesson, 2006), scripting markets (Storbacka & Nenonen, 2011), network mobilization (Van Bockhaven and Matthyssens (2017), network pictures (Ramos, Henneberg, & Naudé, 2012), and sense-making and agenda construction (Möller, 2010). Interestingly, only a few studies have focused on the outcomes of market work (Kjellberg, Azimont, & Reid, 2015; Vargo, Wieland, & Akaka, 2015), and literature is silent when it comes to measures related to these outcomes.

This echoes the identified need for further research on connections

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between institutional work and institutional outcomes identified by Lawrence, Leca, and Zilber (2013). They argue that the “definition of institutional work as purposive action aimed at affecting institutions leaves aside the issue of whether those efforts are successful in shaping institutions” (p. 1029). Kindström, Ottosson, and Carlborg (2017) also conclude that the corpus of qualitative research into market shaping could be a starting point for the development of quantitative research, in which findings are generalized and measurement constructs developed.

Arguably, for market work to become an integral part of the industrial marketing and management toolbox, measures are needed. As organizations are encouraged to consider shaping strategies (Reeves, Love, & Tillmanns, 2012) they have yet to develop appropriate means of assessing the effectiveness and usefulness of such strategies. Executives look at metrics to understand past, current, and future business activities and therefore, assessments of the effectiveness of market work can provide the basis for better management decision making and deriving lessons for the future.

The usefulness of metrics related to market work extends beyond the focus of individual organizations, as they permit comparability with other organizations, industries, and across time. Metrics are also important for scholarly work as they provide a basis for validation of theories and relationships among concepts. Hence, our research focuses on developing approaches to measure the outcomes of market work, i.e., market change. The argument is that to enable appropriate resources allocation between alternative approaches, firms need to be able to evaluate the effects of their market work efforts. Furthermore, without suitable measurement approaches, there is an obvious risk that market work will remain mostly unknown to managers and insignificant in the management of firms (Dover & Lawrence, 2010), which would further accentuate the theory-practice gap identified in management and marketing (Jaworski, 2011; Reibstein, Day, & Wind, 2009; Starkey & Madan, 2001).

Therefore, the purpose of our research is to (1) *delineate the domain of market change and provide an operational definition of its elements*, and (2) *develop a composite index of market change*.

As literature provides mainly general outlines of market change, and no tested scales exist, we engaged in a research process that consisted of an inductive qualitative phase and a deductive quantitative phase. During the inductive phase we conducted 78 interviews in 21 firms in four countries and based on our analysis identified a set of 22 facets of market change, which were further grouped into six elements, related to exchange, use, supply, representation and norms. During the deductive phase we developed and tested measurement indicators for the 22 facets of market changes, used a PLS path model to build an index for market change and tested the model for reliability and validity using a sample of managers from New Zealand and Finland.

Our research makes two specific contributions. First, the key contribution of our research relates to the development of an index to measure market change. It is, in our understanding, the first such measure, and the index can form a basis for validating many of the ongoing developments related to market-shaping in marketing and management literature. Second, our research provides a base for understanding “market work”, as it identifies the elements that market work should focus on.

In the next section, we discuss our methodological choices and the research process. We then describe the inductive qualitative research process and its outputs in terms of identified elements and facets of market change. In the following three sections, we elaborate on our deductive qualitative research phase and its steps: (1) specification of indicators for the identified elements; (2) reliability and validity assessments of the developed PLS path model; and (3) validating the market change index. Finally, we conclude by explicating our contributions to theory and managerial practice, and by providing directions for further research.

2. Methodological considerations

As market systems are composed of many elements and linkages between these elements, we apply a structural approach (Gatignon, Tushman, Smith, & Anderson, 2002) for assessing market change. In designing our research process, we have been informed by our pre-understanding developed during close to 10 years of academic research related to firms' efforts to influence markets [references to be quoted after the review process]. During this research we have been informed by a *wide variety of research traditions and literatures* within marketing and management. Areas covered include markets-as-practices (Andersson, Aspenberg, & Kjellberg, 2008; Kjellberg & Helgesson, 2006, 2007), markets-as-networks (Johanson & Vahlne, 2011; Mattsson, 1987), market-driving strategies and proactive market and customer orientation (Blocker, Flint, Myers, & Slater, 2011; Jaworski & Kohli, 2017; Jaworski, Kohli, & Sahay, 2000; Kumar, Scheer, & Kotler, 2000; Narver, Slater, & MacLachlan, 2004), consumer behavior (Chaney, Ben Slimane, & Humphreys, 2015; Giesler & Fischer, 2016; Humphreys, 2010; Martin & Schouten, 2014), stakeholder marketing (Hillebrand, Driessen, & Koll, 2015; Hult, Mena, Ferrell, & Ferrell, 2011), institutional approaches to markets (DiMaggio, 1988; Fligstein, 2001), institutional work and institutional entrepreneurship (Battilana, Leca, & Boxenbaum, 2009; Greenwood & Suddaby, 2006; Lawrence & Suddaby, 2006), non-market strategy (Baron, 1995), strategic entrepreneurship (Alvarez & Barney, 2007; Sarasvathy, 2008), economic sociology (Aspers, 2010; Granovetter, 1985; Swedberg, 2009), and actor-network theory (Callon, 2007; Latour, 1987, 2007).

A common thread in this development is an acceptance of the systemic nature of a market (Vargo et al., 2017), which leads us to look beyond the blinders of the seller–buyer dyad: to see the dyad as part of a larger network or system of actors who, governed by institutional arrangements, contribute to the creation of value (Håkansson & Johanson, 1992; Mele, Pels, & Storbacka, 2015; Vargo & Lusch, 2016).

Building on these foundations and for the purpose of this research, we define markets as *complex adaptive socio-technical-material systems* (Wollin & Perry, 2004), *consisting of institutions, actors, practices, and discourses* (Slater & Tonkiss, 2001) *that organize particular economized exchanges* (Nenonen et al., 2014).

However, none of above discussed literatures provided us with any scales for measuring change in markets. Measuring change – be it organizational, technical or market change – is notoriously difficult due to the elusive and complex nature of such phenomena (Gatignon, Tushman, Smith, & Anderson, 2002; Todnem By, 2005). As this research aims to produce and socialize relevant management thinking (Fendt, Kaminska-Labbé, & Sachs, 2008), we concluded that rather than creating measures purely based on literature, we wanted to anchor this in management reality. Consequently, to delineate what market change means and how change can be measured within our market definition, we engaged in an inductive qualitative research phase, with the aim to identify elements of market change relevant to managers, and a deductive quantitative research phase, with the aim to develop the findings into measurement indicators that form the basis for a composite index measuring market change as an aggregate of changes in the identified elements and their various facets. The goal of this approach was to cover the multi-faceted nature of the market phenomenon.

These phases were interlinked, in that the quantitative study used the results of the qualitative phase as input. Consequently, we first made a judgment related to the quantitative stage by operationalizing market change and its elements as formative, rather than reflective, constructs (Diamantopoulos & Siguaw, 2006). This was based on the realization that changing elements of the market could be viewed as causing market change rather than the other way around. Thus, market change does not necessitate a change in all elements, and a change in any of the elements does not necessarily result in changes in all its facets and their indicators (Jarvis, MacKenzie, & Podsakoff, 2003).

This choice influenced the set-up of the qualitative phase as the first

step of developing an index to measure market change was to determine the core elements of market change, and to specify key facets of the construct's domain (Diamantopoulos, 2011). To do so, we used a qualitative and inductive research approach. The details of this process are described in the next section. It is, however, important to note that to understand how firms approach market work, we chose to focus this part of our research on a sample of firms that had a documented track-record of engaging in strategies aimed at changing their operating environment. Analyzing their activities gave us a managerially anchored view of the possible facets of markets that market work focuses on. This was further developed and strengthened by consulting the above listed literatures.

Based on the results for the inductive qualitative phase, we engaged in a deductive quantitative research phase that consisted of three steps: (1) specification of indicators for the identified elements; (2) reliability and validity assessments of the developed PLS path model; and (3) validating the market change index. As noted above, there is a lack of literature that would identify and validate variables and measures related to change of multi-faceted markets. Hence, we develop and validate indicators, building on Churchill's (1979) process description, while taking into account the special requirements of developing formative indicators. In specifying indicators, we changed focus from the actions of a focal firm to a more generic view of change in markets. Having established the indicators, we built a model for measuring change in markets, which we operationalized as a formative first-order, formative second-order model (Becker, Klein, & Wetzels, 2012; Diamantopoulos, Riefler, & Roth, 2008; Jarvis, MacKenzie, & Podsakoff, 2003), where first-order elements are formatively measured latent constructs that form a more abstract general (second-order) latent construct - market change. The sample used in this phase of the research, covered a broad set of firms, independently of whether they had engaged in market work.

As market change is operationalized based on formative indicators, we refer to the final measurement tool as a formative index rather than a scale (Bollen & Lennox, 1991; Hair, Hult, Ringle, & Sarstedt, 2014). The details of the quantitative phase will be discussed in subsequent sections.

Finally, it is important to note that conceptualizing markets as systems (Hillebrand, Driessen, & Koll, 2015; Vargo et al., 2017) means that there are no objective market boundaries. On the contrary, the boundaries of markets are defined by the cognitive framing of managers, as suggested by constructionist view to market-making (Araujo, 2007) and business networks (Prenekert & Hallén, 2006) as well as network pictures literature (Henneberg, Mouzas, & Naudé, 2006). Thus, the resulting index will measure the market change from the subjective perspective of the focal actor, i.e., the organization or individual interested in gauging its market.

3. Specification of the elements of market change

During the first phase of our research process, we conducted an inductive examination of a sample of firms that had successfully engaged in processes aimed at influencing their operating environment. The objective is to identify the market elements and facets of these elements that firms engaging in market work would focus on. During the analysis of the empirical data we adopted Suddaby's (2006) suggestion to consult literature to provide theory-based explanations for our findings. We next discuss the procedures used for sampling, data collection and data analysis, and present the results.

3.1. Sampling and data collection

We followed theoretical sampling as suggested by Glaser and Strauss (1967) and Eisenhardt and Graebner (2007), seeking a sample that is not representative but suitable for illuminating the researched phenomenon. Sampling decisions were made in terms of firms and

informants.

We sought to identify case firms that are diverse in terms of industry, size, country of origin, international reach, technology, strategy, ownership and history, but who have one commonality: A documented track record of successfully engaging in market work aimed at changing their market. As market work is not commonly understood, we developed a set of two criteria: (1) the firms had purposefully engaged in actions aimed at shaping elements in their market, and (2) the process had lasted long enough to provide a longitudinal perspective (i.e., at least 3 years). To help us with the sampling we engaged academics (a total of six) that had a documented record of making research about markets, and local experts that had firsthand knowledge of firms (a total of eight experts, representing research institutes and consulting firms).

The sample used in our research consists of six firms headquartered in Finland, five in New Zealand, five in Singapore and five in Sweden. The firms represent a diverse range of industries: cleaning and polishing technology, construction, escalators and elevators, facility management, food and beverage, food retailing, forest products, forest service, healthcare, hydraulic components & systems, insurance, legal services, pets and pet accessories, power solutions, retail banking, sports and well-being, travel and hospitality, and utilities.

As market work is usually long-term in nature, the selection of informants within firms focused on individuals that had senior positions and had been involved in the strategic initiatives over a longer period. Strategy processes related to market work are also typically considered sensitive topics that are not disclosed freely to researchers. Thus, the research sample had to be limited to firms willing to provide sufficient access to needed data.

The empirical data consists of 78 in-depth semi-structured interviews with 82 interviewees, ranging from 25 min to 110 min in length, average interview length being 59 min (a total of 4600 min). We employed an intensive interview format with broad, open-ended questions (Charmaz, 2006). First, we prompted interviewees to give personal accounts of their firm's actions related to their market work. A typical opening question in interviews was "Could you please describe case X (a successful initiative identified during the sampling phase by external experts) in your own words – preferably in a chronological way – as a story." This made for opening narratives unbiased by interviewers' questions or theoretical framing. Next, we asked the interviewees to reflect on events, actions, or underlying organizational traits related to market work. Typical questions at this stage were: "Which individuals/departments were most involved in the process? What did they do in practice – and how?"; "Were there some key events that you are able to recognize retrospectively?"; "What were the outcomes of this process?". Throughout the interviews, the interviewees probed with follow-up questions to garner the widest possible understanding.

3.2. Data analysis

The collected data contains many interesting avenues for analysis, including the role of individuals, the process and timing of market work, possible combination of market work efforts. However, the goal of this study was to identify the elements of markets that the firms' efforts focused on.

The interviews were transcribed and analyzed using NVivo11 software. Our data analysis followed principles of grounded theory (Glaser & Strauss, 1967), but to improve the qualitative rigor of our work, we adopted the Gioia methodology (Gioia, Corley, & Hamilton, 2013), which strives towards a data structure consisting of informant-centric first order concepts (facets of market elements) and theory-centric second order themes (market elements). The structure of our findings is depicted in detail in Appendix 1.

Table 1 summarizes the findings, by illustrating the markets elements and their facets. We identified a total of 22 first order concepts which were grouped into six second order themes. We interpreted these

Table 1
Identified elements of market change and related facets.

Element	Identified facets of change
Exchange	Change of tangible product/service properties Change in scope of offering (degree of bundling) Change of pricing logic (price carrier) Change of price level Change in how providers find customers Change in how customers find providers
Customers & Use	Change in how customers use the product/service Change in customer/user groups Change in what customers value/utility sought Change in infrastructure supporting use
Supply	Change in number of providers Change in how providers interact and cooperate Change in the number of providers' suppliers/partners Change in the types of providers' suppliers/partners Change in how providers interact with suppliers/partners
Representations	Change in terminology used Change in descriptions used by media Change in market research and statistics Change in industry associations
Norms	Change in technical standards Change in government regulation (regional, national, intl.) Change in social conventions

six themes to represent the elements of market change and the 22 first order concept to represent various facets of change to these elements. Interestingly, all the 21 case companies were involved in market work aimed at influencing more than one of the identified second order themes – but none of them worked on all the six second order themes.

In line with grounded research, and although we, as noted above, were not uninformed about prior work in this area, we took a stance defined as “witting [...] ignorance of previous theorizing” (Gioia et al., 2013, p. 21). The aim was to give priority to the empirical data, and as the analysis went on and themes and dimensions emerge, use literature to refine the articulation of emergent concepts and relationships (Suddaby, 2006). In retrospect, we can conclude that identifying this literature without the guidance provided by our empirical data would have been difficult and likely resulted in quite a different outcome. This process is illustrated in Appendix 2, in which we let literature further inform our empirical findings.

4. Specification of indicators of the elements of market change

The focus of this step of our process was on the development of indicators that form the identified elements of market change. Our aim was to provide a comprehensive coverage of the elements, which is particularly important in formative models, as formative indicators must comprehensively cover every aspect of the construct. Consequently, any exclusion of a relevant item will exclude part of the construct itself.

The indicators were informed by the insights from the qualitative research, the associated literature review, and developed based on the identified 22 facets depicted in Table 1. Importantly, when articulating the indicator text, we translated the efforts carried out by the analyzed focal firms into a more generic language that describes changes in a market. E.g., instead of asking if a firm had changed the terminology commonly used in their industry, we instead focused on whether “the terminology commonly used in our industry has changed”, independently of who has initiated this change.

After the development of 22 indicators we used three separate methods for evaluating the validity of both the identified elements and the indicators: an expert panel consisting of six professors, cognitive testing with practitioners, and a pretest of the developed measurement instrument with a sample of 54 MBA students.

4.1. Expert panel

A panel of six individual expert judges, all professors, from departments of marketing at 6 different universities in New Zealand, England, Finland, Sweden and USA judged elements and indicators for conceptual consistency of indicators, face validity and content validity. The judges were first given the element definitions and were asked to evaluate each indicator as very representative, somewhat representative, or not representative of market change. After this they evaluated the suggested indicators for each element of market change using the same scale. All indicators were rated as either very representative or somewhat representative of market change, supporting face and content validity. Thus, no indicator was eliminated at this stage.

Overall, the expert judges suggested six changes to the elements and the indicators. First, indicators related to channels linking customers and providers were deemed to have a poor conceptual fit with the “Exchange” element and the other four elements, and thus these indicators were turned into a sixth element: “Channels”. Because of this change, the remaining part of the original “Exchange” construct was relabeled as ‘Products & price’ for increased clarity. Second, the label “Supply” was estimated to be limiting and based on the expert judges' recommendations, this element was re-labelled as “Supply-side Network”. Third, the expert judges recommended adding three additional indicators: the work division between customers and providers (under the ‘Customers & Use’ element), the work division between providers and their suppliers and/or partners (under “Supply-side Network”), and the symbols of legitimate markets such as events and awards (under “Representations”). Finally, the expert judges stressed the importance of having a clear difference between the users' preferences and social norms related to the markets.

4.2. Cognitive testing

To check the relevance, practical meaning, and scope of each element and related indicators, a series of qualitative cognitive pretesting interviews were carried out with 12 practicing managers of 12 different firms in New Zealand. The indicators were subjected to cognitive pretesting to evaluate comprehension, retrieval of information, judgment and ability to formulate a response (Tourangeau, 1984). To ensure applicability of the indicators to the wider population, the pretest participants were selected from a wide range of firms practicing in many different fields. The tests were administered by a third party professional market researcher to secure necessary distance from the topic.

To aid interpretation, the wording of 16 indicators was amended slightly because of the cognitive pretesting. Most of the changes brought forward were minor: changing individual words or adding explanations in parentheses. For example, RE2 (see Table 2) was originally worded “The language and/or descriptions media use to describe our industry has changed”, but after the testing it was modified into “The language and/or descriptions that media use to report on our industry has changed”.

However, the most important outcome of the cognitive pretesting was that it revealed the challenges associated the word “market”. Depending on their backgrounds, different interviewees framed “market” in markedly different ways: for some it meant a product category, others perceived it as a geographical area or a customer segment, whereas some conceptualized markets as groups of firms providing similar products or services. Due to this unmanageable variation, we chose to keep using the word “industry” to denote market systems in the indicators. According to the cognitive pretesting, the word “industry” was perceived very similarly among the interviewees. However, there may be a consistent bias in the indicators due to this choice as “industry” is associated more strongly to the supply-side of the market system, potentially leaving the demand-side aspects to lesser attention.

Table 2
Final formative indicators.

Element	Indicators	
Products & price	The products and/or services offered in our industry have radically changed (i.e., ours and/or our competitors').	PP1
	The way products/services are combined into offerings has changed (i.e., the way offerings are bundled or configured).	PP2
	The pricing structure of products or services in our industry has changed (e.g., from pricing on an hourly basis to flat-rate pricing, from selling ownership to renting or leasing, etc.).	PP3
	The price levels of the products and/or services in our industry have changed considerably (e.g., from higher to lower – or vice versa, more variation in prices).	PP4
Customers & use	Customers have started to use existing products and/or services in different ways or for different purposes (than our industry originally intended).	CU1
	The kinds of customers who buy our industry's products and/or services have changed (i.e., the traditional customers have exited the market and/or new kinds of customers have entered the market).	CU2
	Within our industry, what customers are looking for in products and/or services has changed.	CU3
	Within our industry, the options customers have regarding full-service versus self-service have changed (e.g., gone from more full-service to more self-service – or vice versa, etc.).	CU4
	Physical or technological infrastructures that enable customers to use our industry's products and/or services have changed (i.e., things our industry don't directly produce but enable usage – such as roads for cars, internet for online shops, etc.).	CU5
Channels	There are new or different channels that our industry uses to find and/or service customers.	CH1
	Customers are using new or different channels to find and/or contact potential service providers in our industry.	CH2
Supply-side network	The number of competitors operating in our industry has changed (i.e., there are fewer or more than 5 years ago).	SN1
	The ways in which competitors in our industry interact and cooperate have changed.	SN2
	There has been significant changes in the number of suppliers and/or partners that we and/or our competitors work with (there are fewer or more than 5 years ago).	SN3
	We and/or our competitors have started to work with new kinds of suppliers and/or partners.	SN4
	There have been changes in how we and/or our competitors outsource work to suppliers and/or partners (i.e., outsourcing occurs to a greater or lesser extent than 5 years ago).	SN5
Representations	The ways in which we and/or our competitors interact and cooperate with suppliers and/or partners has significantly changed.	SN6
	The terminology commonly used in our industry has changed.	RE1
	The language and/or descriptions that media use to report on our industry has changed.	RE2
	The categories used by official statistics and/or research agencies to report on our industry and/or its products/services have changed (e.g., new categories have been created, old categories have been renamed, etc.).	RE3
	The key events and/or awards (e.g., trade fairs, exhibitions, competitions, prizes, etc.) related to our industry have changed their focus.	RE4
Norms	The industry associations (sometimes known as trade associations) we are connected to have changed their focus (e.g., the types of businesses they represent, the themes they promote, etc.).	RE5
	There have been changes in our industry's standards (e.g., technical standards, specifications, voluntary codes of conduct, etc.).	NO1
	There have been changes to the government regulations (regional, national, or international) relevant to our industry.	NO2
	In our industry, the types of products, services or activities perceived as generally acceptable have changed (e.g., environmental values have become more important).	NO3

4.3. Pretesting the measurement instrument

Once the initial set of indicators had been developed and refined based on the analysis of the qualitative data, interviews with six expert judges and the 12 qualitative cognitive pretests with practicing managers, the indicators were pretested on 54 professionals studying for an MBA in New Zealand. This pretest was conducted to evaluate comprehension, content validity and to explore the redundancy of any indicators. The pretesting process invited participants to respond to a survey comprising all indicators, with reference to their own firm, and to provide any open-ended feedback about any potential indicators which they found ambiguous, confusing or repetitive.

Preliminary statistical analyses (correlation analysis and descriptive statistics) on the pretest data were explored to examine for item redundancy or collinearity (very large correlations) and/or any potential respondent confusion or irrelevant indicators (e.g., indicators with many “don't know” responses). The pretests revealed no high correlations between indicators of market change and descriptive statistics did not display any patterns which would indicate any potential respondent confusion or irrelevant indicators. Furthermore, the open-ended comments revealed that all indicators were interpreted as intended and did not display any signs of ambiguity.

5. Reliability and validity assessments

The next step of our research process focused on validation of the market change index measurement model using a sample of practicing managers in New Zealand and Finland. The sample frame utilized for this study consisted of firms that had participated in consortia programs in these two countries. The firms are of different sizes and represent a wide variety of industries. An online survey was administered and

hosted by Research Now, an international field company specializing in online data collection. Participants received an email invitation to participate in the survey which was embedded with a unique URL linked to the survey. A small completion incentive was provided in the form of an opportunity to receive a summary of the results from this study. A pilot test (with 10% of the total sample frame) preceded the main launch of the survey. The survey was sent to 520 individuals. A total of 102 responses were received, giving a response rate of 19.6%. Out of the responses, 25 were incomplete, resulting in a total sample size of $n = 77$ individuals (response rate 14.8%). The PLS sample size requirement is considered to be ten times which ever is greater, A or B, where A is the largest number of formative indicators used to measure a single construct, and B is the largest number of structural paths directed at a particular construct in the structural model (Barclay, Higgins, & Thompson, 1995; Hair, Sarstedt, Hopkins, & Kuppelwieser, 2014). In our case both A and B implies as sample requirement of 60, indicating that our sample is adequate for our analysis.

The survey comprised 25 indicators measuring the final six elements of market change (see Table 2). Furthermore, several additional indicators were included in the survey to help to establish the external and nomological validity of the market change index (see Sections 5.2 and 6.2).

A PLS path model was developed. PLS models comprise: (1) a measurement or outer model relating the measured indicators to a latent variable (element) and (2) a structural or inner model that represents the latent variables (elements) and their interrelationships. The measurement model is first assessed, followed by assessment of the structural model. To evaluate the quality of the formative measurement model we apply the criteria as recommended by Hair, Hult, Ringle, and Sarstedt (2014). Specifically, the indicator collinearity, external validity and individual indicator validity are investigated; these are now

discussed.

5.1. Measurement model: collinearity and external validity checks

Regression analyses were conducted to check for redundant indicators. Each formative indicator for the elements of market change was regressed on other formative indicators. No indicators demonstrated critical evidence of indicator collinearity, i.e., variance-inflation factors greater than the threshold of 5 recommended by Hair, Hult, Ringle, and Sarstedt (2014), with the highest VIF = 3.014.

The very nature of formative measurement renders an internal consistency perspective inappropriate for assessing the suitability of indicators (Diamantopoulos & Winklhofer, 2001). Hair, Hult, Ringle, and Sarstedt (2014) recommend instead evaluating the extent to which a formatively measured construct is highly correlated with a reflective measure of the same construct. Thus, external validity can be obtained by examining how well the formative indicators relate to external variables (Diamantopoulos, 2008; Diamantopoulos & Winklhofer, 2001). Therefore, a global measure was included to summarize the essence of each element of market change (Diamantopoulos & Winklhofer, 2001; Brodie, Winklhofer, Coviello, & Johnston, 2007; Diamantopoulos, 2008; Hair, Hult, Ringle, & Sarstedt, 2014). Assuming that the overall measure is a valid criterion, the relationship between a formative indicator and the overall measure indicates indicator validity (Eggert & Fassot, 2003; MacKenzie, Podsakoff, & Jarvis, 2005).

To evaluate the extent to which the elements of market change exhibit external validity, a separate redundancy analysis was conducted for each element of market change using SmartPLS software (v. 3.2.3). To conduct these redundancy analyses, each formatively measured element of market change was utilized as an exogenous variable to predict an endogenous latent variable operationalized through a global reflective indicator for that element. For example, consider the element of market change termed “Representations”. In our model, we operationalize representations through five (measured) indicators that act as direct causes of representations. This formatively measured construct was used as an exogenous latent variable to predict an overall endogenous latent variable operationalized through a global reflective measure of “Representations” (i.e., “Thinking about how your industry is commonly defined and described, how much has this changed overall over the last 5 years?”). The strength of the path coefficient linking the two constructs is indicative of the validity of the designated set of formative indicators tapping into the construct of interest Hair, Hult, Ringle, and Sarstedt (2014). In this context, Hair, Sarstedt, Hopkins, & Kuppelwieser, 2014 recommend a magnitude of at least 0.70 for path coefficients, which translates into an R-Square of 0.49.

The path coefficients and R-Square measures from this analysis depicted in Table 3 demonstrate that all path coefficients between the measured constructs (elements of market change) and global measures exceed 0.8 and all R-Squares are above 0.64, thus providing support for each formative element's external validity.

5.2. Individual indicator validity

For the purposes of validation, two additional reflective indicators

Table 3
External validity analysis.

Element	Path coefficient to global measure	R-Square	Number of indicators
Products & Price	0.802	0.643	4
Customers & Use	0.818	0.669	5
Channels	0.812	0.660	2
Supply-side Network	0.819	0.730	6
Representations	0.815	0.665	5
Norms	0.824	0.678	3

were used to measure market change. The indicators reflecting the overall market change were adapted from Strandholm, Kumar, and Subramanian (2004), and they explore respondents' interpretations of how much overall change there has been in their industry and whether the industry has developed positively over the past 5 years. The reflective measurement of the market change construct was investigated for validity and internal consistency. The measurement model for this reflective scale reveals a composite reliability of 0.945, indicating that the scale had high levels of internal consistency reliability. The AVE value for the scale is 0.892, which is greater than the recommended minimum level of 0.5 (Hair, Hult, Ringle, & Sarstedt, 2014), indicating that the scale has high levels of convergent validity.

Next, the formative elements of market change were investigated for external validity. An important criterion for evaluating the contribution of a formative indicator is its outer weight with the latent variable scores as the dependent variable and the formative indicators as the independent variables (Hair, Hult, Ringle, & Sarstedt, 2014). The outer weights can be compared with each other and can therefore be used to determine each indicator's relative contribution to the construct. The number of formative indicators used to measure the construct impacts outer weights (i.e., the maximum possible outer weight and significance of outer weights declines as the number of indicators increases). Building on (Hair, Hult, Ringle, & Sarstedt, 2014) the outer weights were, therefore, examined for each element of market change separately.

The outer weights for each measured indicator, displayed in Table 4, illustrate that most formative indicators are significant at the 0.05 level. Analysis of the formative indicators outer loadings reveal that for formative indicators with non-significant outer weights, all outer loadings are > 0.5, therefore these indicators were not removed from the model (Hair, Hult, Ringle, & Sarstedt, 2014).

6. Validating the market change index

The final step of our research process focused on validation of the market change index, for which two PLS structural models were developed using SmartPLS software (v. 3.2.3). The first model relates each of the six elements of market change to an overall reflective

Table 4
Evaluation of individual indicators.

Element	Indicator	Outer weight	Outer loadings	T value
Products & Price	PP1	0.268	0.843	2.548**
	PP2	0.523	0.941	4.265***
	PP3	0.228	0.806	2.277**
	PP4	0.134	0.736	1.305
Customers & Use	CU1	0.394	0.834	3.433***
	CU2	0.109	0.820	0.960
	CU3	0.312	0.889	2.084**
	CU4	0.394	0.847	3.806***
	CU5	0.186	0.154	2.250**
Channels	CH1	0.308	0.896	1.606
	CH2	0.737	0.983	4.107**
Supply-side Network	SN1	0.294	0.894	1.536
	SN2	0.005	0.815	0.028
	SN3	0.158	0.859	1.050
	SN4	0.004	0.786	0.024
	SN5	0.095	0.883	0.612
	SN6	0.53	0.962	2.605**
Representations	RE1	0.241	0.757	1.367
	RE2	0.386	0.909	2.103**
	RE3	0.494	0.903	2.015**
	RE4	0.251	0.843	1.842*
Norms	RE5	0.217	0.801	1.257
	NO1	0.308	0.808	1.559
	NO2	0.119	0.798	0.626
	NO3	0.697	0.942	6.660***

$P < .10$, ** $P < .05$, *** $P < .01$.

Table 5
Path coefficients between elements and market change.

Element	Path Coefficient	T-Value
Norms	0.23	2.891***
Representations	0.17	2.082**
Customers & Use	0.27	4.009***
Products & Price	0.20	2.049**
Channels	0.14	2.552**
Supply-side Network	0.08	0.731

* $P < .10$, ** $P < .05$, *** $P < .01$.

measurement scale for the construct. Path coefficients (i.e., standardized coefficients, λ) are examined to explore the relative contribution of each element of market change to the overall construct (operationalized through the two reflective measures as discussed above).

In addition, a second structural model is constructed whereby the market change index is related to another endogenous latent variable (market level change). The purpose of this model is to contribute to nomological validity by examining the extent to which market change relates to another existing relevant construct. These investigations are detailed below.

6.1. Structural model path coefficients

Given that the formative indicators of the six elements are deemed satisfactory, now the focus turns to the assessment of the proposed relationships of these six elements as part of market change. Table 5 displays the path coefficients between each of the six elements and the overall market change construct.

Five of the six path coefficients for the six formative elements are significant at the 0.05 level. The path coefficients demonstrate that Customers & Use ($\lambda = 0.27$) is the most important component that contributes to overall market change, followed by Norms ($\lambda = 0.23$), Products & Price ($\lambda = 0.20$), Representations ($\lambda = 0.17$), Channels ($\lambda = 0.14$), and lastly, Supply-side Network ($\lambda = 0.08$), which does not demonstrate a significant relationship with market change (at the 0.05 significance level). The six elements explain 86.5% of the variance in market change.

6.2. Nomological validity

Once the formative indicators of each element of market change were validated, the individual indicators were used to form an index to measure market change. Following the advice of Diamantopoulos and Winklhofer (2001) and Jarvis, MacKenzie, and Podsakoff (2003), we focused on establishing the nomological validity of the developed index. Nomological validity is concerned with the extent to which a construct is related to other existing relevant constructs and is manifested in the magnitude and significance of the relationships between the formative construct and other construct(s) in the research model, which are expected to be strong and significant based on theory and previous research. Several authors suggest testing the nomological validity of a formative construct by correlating its formative items with reflective indicators with which the formative construct should theoretically be correlated (e.g., Bagozzi, 1994; Diamantopoulos & Winklhofer, 2001; Peng & Lai, 2012; Thornton, Henneberg, & Naudé, 2014).

To test the nomological validity of the market change index, we explored literature and noted that marketing seems to focus on firm level outcomes (c.f., Kumar, Scheer, & Kotler, 2000). Marketing literature is curiously silent about the impact of market work on market-level performance indicators such as market size and market growth rate. This is likely to be the result of the fact that the unit of analysis in most studies is the focal firm and its relationship with customers.

Table 6
Market level outcomes.

Indicator	Outer Loading	T-Value	Composite reliability	AVE
Size: MO1	0.840	7.462***	0.867	0.685
Profitability: MO2	0.814	9.067***		
Value creation: MO3	0.829	7.805***		

* $P < .10$, ** $P < .05$, *** $P < .01$.

However, recent research in strategic management suggest a need for a 'system-based and value-creation-centric approach', as a complement to the 'firm-based and value-capture-centric approach' (Amit & Han, 2017). Discussing the value creation perspective, Tantalo and Priem (2016) argue that using stakeholder synergies, firms can 'grow the pie', i.e., grow the size and profitability of the market. Hence, we hypothesize that market change is positively related to market-level outcomes, measured by the size and growth rate of the market. This, interestingly, suggests that market work is likely to have (positive) effects for many actors in the market, including not only customers, but also suppliers, channel partners and even competitors. This resonates with calls for more research on the customer consequence (such as higher quality, improved level and speed of service) of market orientation (Jaworski & Kohli, 1996).

We adapted an existing (reflective) scale for market level outcomes developed by Powell (1995) and validated in a number of additional studies (e.g., Douglas & Judge, 2001; Sharma, 2006; Sharma & Gadenne, 2000). This scale was subjected to pretesting, as previously specified. In addition, further checks on the reliability and validity of the scale were conducted. Table 6 demonstrates that the composite reliability (0.867) of the market level outcome construct was above the threshold of 0.7, and the AVE was above the minimum value of 0.5 (AVE = 0.685). Furthermore, the outer loadings for each indicator are all above 0.7, demonstrating indicator reliability.

One of the measures of market level outcomes, the indicator measuring growth in industry profitability over the last 5 years, was further validated by external measures of gross domestic product by industry. The correlation between data relating to gross domestic product by industry (expressed as a percentage increase/decrease from 2011 to 2016), demonstrated a strong correlation with the self-report measure in the survey ($r = 0.76$), indicating that this measure represented an accurate reflection of actual changes that had occurred in the specified time period. Fig. 1 shows the proposed structural model that test the relationships between market change and market level outcomes.

Since all data collected for this study are subjective and from a single source there is the potential for common method variance problems which can either inflate (Williams, Cote, & Buckley, 1989) or suppress (Ganster, Hennessey, & Luthans, 1983) the magnitude of relationships being investigated. Therefore, prior to investigating the results, Harman's one factor test (Harman, 1976) was employed to test for common variance among overall measures of the elements of market change and market level outcome indicators. This test demonstrated that the retained factor solution explained 76.6% of the variance, while the first factor explained 27.9% of the variance. Thus, providing no evidence to suggest that common method variance problems were evident in the data.

The results of the structural equation model show that the structural path emanating from market change is significant, with the path coefficient with market level change at 0.27 ($p < .05$). In addition, market change explains 11% of the variation in market level outcomes, which demonstrates some explanatory power (see Fig. 1). Even though in other context 11% explanatory power could be considered weak, here it is important to bear in mind that market level outcomes – operationalized as increases in market size, market's profitability, and

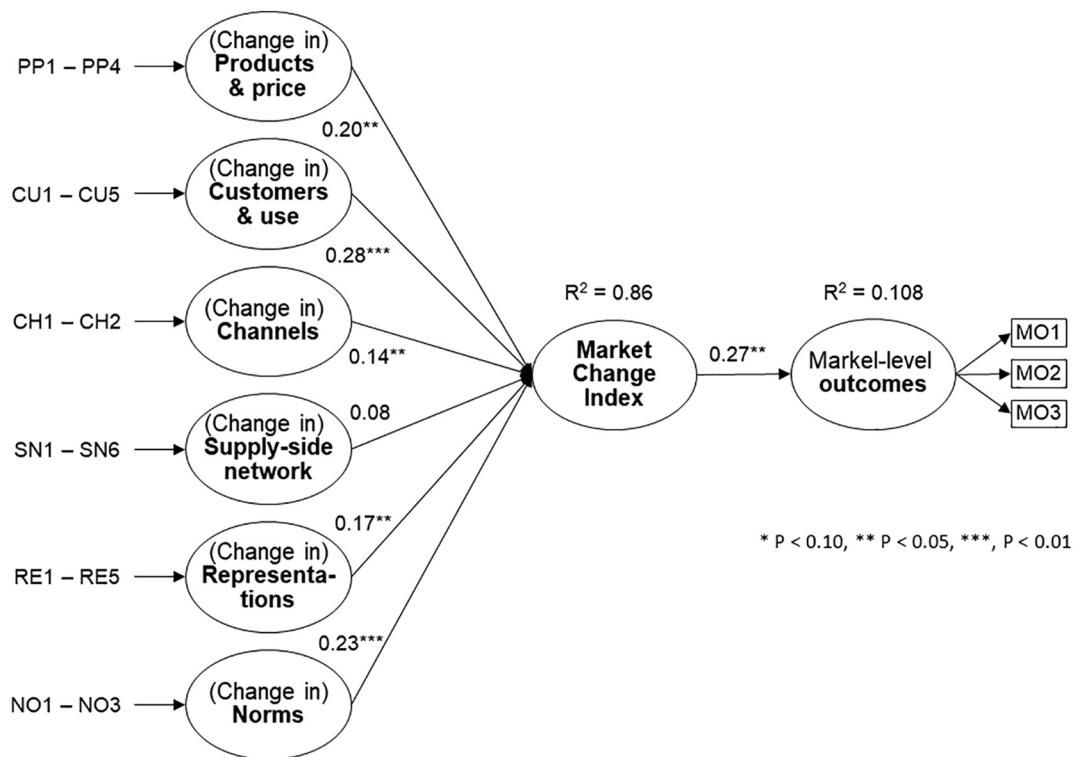


Fig. 1. Structural model for nomological validity assessment.

market's ability to create value – are influenced by various other factors than the core construct of the model, i.e., changes in market elements. For example, a period of economic boom is likely to increase market size and profitability even if all the facets of market remain unchanged. Thus, the results support the nomological validity of the 'market change index' as operationalized as a second-order formative construct.

7. Discussion

This section summarizes the contributions of the research, discusses limitations and avenues for further research, and highlights how this research informs managerial practice.

7.1. Theoretical contributions

The purpose of our research was to delineate the domain of market change, provide an operational definition of its elements and develop a composite index of market change. Our research is underpinned by a systemic view of markets. A market is not only a set of customers, the value chain or the industry, but a much larger system (cf., Mele, Pels, & Storbacka, 2015; Vargo et al., 2017); a socio-political-technological-material context, governed by institutional arrangements, making the market malleable (Nenonen et al., 2014) and to some extent designable.

Our research makes two specific contributions. First, the key contribution of our research relates to the development of an index to measure market change. It is, in our understanding, the first such measure, and the index can form a basis for validating many of the ongoing developments related to market-shaping in marketing and management literature. We identified six elements of market change: changes in Products & Price, Customers & Use, Channels, Supply-side Network, Representations and Norms. In the qualitative phase of the study we identified at total of 22 facets of these elements, and based on these facets we developed a formative first level, formative second level measurement model with 25 indicators forming the six elements, which

in turn form market change. The reliability and validity of the model and the final market change index was tested using the processes and practices suggested by Diamantopoulos and Winklhofer (2001), Diamantopoulos (2008) and (Hair, Hult, Ringle, & Sarstedt, 2014).

Second, building on the "turn to work" approach (Phillips & Lawrence, 2012), our research provides a base for understanding "market work", which we define as purposeful efforts by a focal actor to perform and transform markets. Our research identified the possible elements that market work should focus on. Working on the elements will, however, require new managerial practices, which accept that no actor can fully predict or control the development of a market. They constantly evolve, partly by design, i.e., market work carried out by various actors, and partly based on unpredictable emergence. Markets simply develop in surprising directions and a central key to success is to be able to identify, benefit from, and curate emergent development. Consequently, firms need to strike the balance between deliberate design and spontaneous emergence (Mars, Bronstein, & Lusch, 2012). This highlights that market work should reflect the logic of non-predictive strategy (Wiltbank, Dew, Read, & Sarasvathy, 2006), and be less focused on planning while emphasizing experimentation and learning based on how the market responds to the market work. Furthermore, our empirical data suggest that firms wanting to engage in market work, should not focus on the identified elements or their 22 facets in isolation. Rather, they should aim to find way in which work on the various facets can interact to reinforce each other (Kindström, Ottosson, & Carlborg, 2017).

Finally, the identified market elements and their facets implies that market work is a set of cross-functional and boundary-spanning activities (Hult, 2011). In their work on market shaping, Kindström, Ottosson, and Carlborg (2017) illustrate how a market shaping actor needs to engage in many individual and aggregated (market work) activities at three levels of influence – system, market offer and technology. The cross-functional nature of market work raises questions related to the work division between marketing and other firm

functions, i.e., is market work a subset of marketing work or is marketing work a subset of market work? For the former to be true, marketing needs to take on a larger role (Webster & Lusch, 2013). As firms attempt to influence the various cognitive, social, and material facets of the market system, marketing should not only implement, but drive business strategy. To create market-shaping strategies, the activities initiated within marketing should “relentlessly move across a company’s internal departments/functions, eventually connecting with external companies to ensure that market-based value creation is delivered to the company’s primary stakeholders” (Hult & Ketchen, 2017, p. 20–21).

7.2. Limitations and further research avenues

The breadth of our theoretical foundations is both a strength and a limitation of our research. The obvious risk of taking such a broad theoretical stance is that the approach will be perceived as shallow, when examined using any of the covered theoretical lenses separately. The choice was, however, dictated by our onto-epistemological approach, in which we have given primacy to the empirical world. The plain fact is that when managers think about markets and work related to changing them, they are not restricted to using a specific theoretical lens. In fact, they choose to take a broad view and explore all possible facets of a market to find way to make progress. This reasoning, however, points to an important avenue for further research. Building on Brodie, Saren, and Pels (2011), we suggest a need for mid-range theorizing related to market work. Mid-range theory should not attempt to provide a general theory about markets, rather it should focus on developing frameworks that make market work actionable.

During the research process, it has become evident that there are ample opportunities to focus firms’ innovation activities towards “market innovation”, as suggested by Kjellberg, Azimont, and Reid (2015). However, although we have identified the main elements of market change, there is still need for further research on the connections between market work and market change. What is needed is first an operationalization of market work, as discussed above, and then research on how effective work on various elements and facets of the market are (see Lawrence, Leca, & Zilber, 2013). Ultimately, this also relates to the idea of “market innovation”: what is the extent of changes needed in the various elements for the market to be viewed as a “new market”? What is needed is an operationalization of market innovation, and a validation of this, for instance, using the developed measurement model.

A self-evident avenue forward is to categorize firms and their operating context to analyze differences in market work aiming at market change. The goal for this could be to identify “archetypical” market work approaches, applied by firms operating in specific contexts and using specific business models. To achieve this, one would need a larger sample of firms, covering as many context and business model characteristics as possible, thus enabling the clustering of firms and related market work approaches.

Finally, the identified elements of market change raise questions related to a better understanding “of the effort that institutional work demands” (Lawrence, Leca, & Zilber, 2013, p. 1029), which has a direct connection to firm level capabilities. To influence the various facets of the elements of market change, firms will need to develop a set of market work related capabilities, which are likely to be dynamic

capabilities (Eisenhardt & Martin, 2000; Teece, Pisano, & Shuen, 1997). Teece (2007, p. 1319–20) argues that dynamic capabilities “embrace the enterprise’s capacity to shape the ecosystem it occupies”, suggesting that such capabilities are essential in market-driving strategies. Recently, Teece (2016, p. 211) has suggested that “dynamic capabilities help enable an enterprise to [...] respond to (or bring about) changes in the market” [emphasis added]. However, to our knowledge, no empirical research scrutinizes the connection between dynamic capabilities and successful market-shaping strategies. Indeed, acknowledging this research gap, and based on a comprehensive analysis of the dynamic capabilities literature, Wilden, Devinney and Dowling (2016, p. 1033) recommend that future research “address dynamic capabilities’ role [...] in shaping markets”. An identification and categorization of capabilities related to market work seems to be a key area of research.

7.3. Implications for managerial practice

The findings of the present study carry important suggestions for practitioners. First, the proposed comprehensive view of market change provides a structure for firms attempting to engage in market work. The structural model, as set out in Fig. 1, and the identified 25 indicators, provide practitioners with an overview of the components of market work.

Second, the identified 25 indicators of market change provide both managers and policy-makers a practical tool to assess the degree of market change. An increased understanding of whether the market is changing can help managers to time their market-shaping strategies to periods in which their market is already experiencing flux – and thus might be more susceptible for deliberate attempts to influence their development, as suggested by Finch and Geiger (2011). In a similar vein, understanding the degree of change in markets can help policy-makers to determine whether the time is right to revise a market’s regulatory set-up. However, both managers and policy-makers should keep in mind that the developed index does not provide a universal, objective and global measurement of the level of change in a particular market. As markets are systems, the relevant boundaries of these systems are always “in the eye of the beholder”, determined by the actor. Thus, two companies operating in fast-moving consumer goods industry may differ in their assessments of market change depending on their context. For example, a small Spanish producer of luxury soaps is likely to conceptualize its market markedly different from global giants like Unilever. Nevertheless, the proposed index should be equally usable by both of these companies – but they cannot rely on each other’s market intelligence.

Third, viewing markets as malleable broadens the traditional definition of market intelligence. Market intelligence or insight is no longer limited to information related to customers and competitors but should cover a broader array of institutional themes including, for example, information on all stakeholder groups, technology, regulation, and even societal changes. The composite index of market change put forward in this paper can provide a starting point for firms to develop more comprehensive market intelligence programs.

Appendix 1: Results of qualitative data analysis 1(2)

Appendix 1: Results of qualitative data analysis 2(2)

Appendix 2: Data analysis results compared with literature 1(2)

Appendix 2: Data analysis results compared with literature 2(2)

Appendix A

Element	Facets of change	Illustrative verbatim
Exchange	Change of tangible product/service properties	Arowana fish, they don't usually eat pellet feeds, you need to feed them frogs, worms, centipedes. So, the problem of feeding this stuff is, as you know, people don't like to handle those things. The other thing is, these feeds, these frogs and worms, they carry parasites and diseases. So when they feed your thousand dollar fish, it will get sick. [...] So my boss has through his research, he's able to develop a kind of attractant inside the pellet where the arowana is really attracted to the pellet and takes it in. [ID: 60]
	Change in scope of offering (degree of bundling)	That is what is special with our approach, when we started facility management. From the outset it was thought to deliver a complete solution: from the walls of the physical workplace to technical installations to making sure that the person sitting at his desk has the right paper and pencils and that the conference equipment works. This was completely new when we started as a facility management provider [ID: 70]
	Change of pricing logic (price carrier)	This legal-department-as-a-service is a fixed-fee service. It is always scoped based on customer's needs. [...] This approach enables us to deliver something that is very close to an experience that you get from using an own corporate legal department, but for a fixed (monthly) fee. [ID: 3]
	Change of price level	At that point of time when we opened, the market acceptance for these types of products was between maybe 60 cents to 80 cents. And the average sales of a typical competitor would be around 30,000 dollars. When we operated the very first store we injected better ingredients. We also invested in good facilities. We priced our products between 1.30 and 1.40 dollars. Our average sales at that point in time for an outlet was 150,000 dollars. Our best performing outlet was 400,000. Yeah, so even though there was a very distinct difference in terms of the price point and customers may have felt at that point no, it's expensive, but the fact is after they've visited us they will come back, you know. [ID: 47]
	Change in how providers find customers	I was thinking under the pear tree "how the hell am I going to pay for this? I want it for my family but how am I going to pay for it?" Renting it (holiday house) out then suddenly becomes, you know, the option. And you start to think about then, how am I going to market it? And you know, how will I keep it full? [...] I actually didn't see it as a new market as such. All we're doing is providing better, more efficient access to all consumers into an existing market. [ID: 28]
	Change in how customers find providers	What the shed designer app did was to push the needs analysis and the visualisation to the customer before they even have effectively gone out shopping around for shed sellers. [ID: 31]
Customers & use	Change in how customers use the product/service	They hunger for technical support from supplier, and so all this year we've been doing a lot of support to our customer in terms of technical support, that means how we educate, we teach the customer how to make use of our cream, how to make use of our cream cheese, to make different types of bakery products. So I think that, well, they are looking for, they really hunger for that support. [ID: 36]
	Change in customer/user groups	So our customers have actually, in the last 24 months, shifted slightly. People are coming to us for cities. And they're coming to us for luxury. So we've broken that whole, "oh, Company X is only for holiday house rental" thing. [ID: 27]
	Change in what customers value/utility sought	[There are parallels to the environmental discussions...], but at the end of the day when it actually costs something then it is not interesting. And this attitude you see a lot related to energy. Energy is something that should cost as little as possible and it shouldn't cost anything for it to be environmentally friendly. So you will notice that no one has energy as their core business, for the real estate companies it is only peripheral. And for the IT companies which have electricity and cooling as their major input and output, it is also somewhat of a secondary activity. So, that's actually quite surprising: to face inertia also on the customer side. [ID: 74]
	Change in infrastructure supporting use	Our part in this is to help drive the Internet of Things too, so that the cost is down to a level that is reasonable. Because our customers should simply pay a reasonable sum for their products and services and then use them, nothing more. [ID: 69]

Supply	Change in number of providers	Actually, it was a merger of two co-operative that formed Company X. It was good to merge to one, so that with their combined sales volume, they grow to certain size. It is important that your overhead is shared by more branches, so that you have also bigger bargaining power, to deal with your supplier and get a better deal. Only with better deal, better input costs, you can pass it to your consumer. [ID: 51]
	Change in how providers interact and cooperate	Having other businesses and other major companies advocating (together) the use of non-welded technology actually broadens our market. Because they're actually selling non-welded technology as well. So it means that our largest competitor really is welded technology, so the more business that can be taken from welded technology enlarges our market. [ID: 5]
	Change in the number of providers' suppliers/partners	We developed two key elements. One was the standardized classes. [...] Instead of teachers choosing their own music and making up their own classes [...] you know, you had a small percentage of teachers who could do that well. So we had those people create the classes. [...] And other was the teacher training system. I purposefully put together a teacher training system that would get people really excited and passionate. Something that they could become real rock stars at. We have something north of 100,000 instructors who are certified in our system. [ID: 38]
	Change in the types of providers' suppliers/partners	Now there are 900 cars (through a courier company) that drive for us. It would have been a huge expense for us to own 900 cars that are used only one or two days a week. So it became an incredibly nice scalability in that solution. [...] They are not our cars, but the drivers are experienced; we feel like it's our drivers. [ID: 64]
	Change in how providers interact with suppliers/partners	The other part that was automated are the engineers, They previously would sign off on the profiles (designs) that we're entering into the system. But now they're signing off on the formulas that are in our couch module (IT system). [ID: 30]
Representations	Change in terminology used	Regarding the product category name, it's a bit still a bit of a mess, [...] the word cream, in Chinese 'naiyou' [...] whether it's dairy cream or non-dairy cream or it's also called 'naiyou'. You always need to put sugar to non-dairy cream in order to stabilise the product so it's always sweet. But our product, the dairy product, we don't add sugar. So, we can't make the Government to set the rule that non-dairy cream supply cannot call them cream, but we call it plain cream. I know it's in a Chinese name, so we educate the customer the difference between plain cream and sweetened cream. [ID: 36]
	Change in descriptions used by media	We engaged the media very much as well, and obviously with interesting products, with different news angles on R&D, product development, interesting promotions, etc. So we engaged the media very, very much. And I would say they played quite a strong role in also giving us and the industry the awareness that was needed in the early days. [ID: 46]
	Change in market research and statistics	This smart building, or intelligent building, theme is being researched by the normal (ICT) market research companies. And they are currently looking at the sub-systems that are important to us, such as access control and lighting. However, it is still rare to find research about integrated systems. [ID: 12]
	Change in industry associations	They have an association. We don't. What we have done is we've started working with Company A and Company B. And just trying to create an industry, at least a, you know, between Company A, Company B and us, we represent pretty much all the industry. It's not a very, you know, it's a very practical way of approaching it without the overhead of an association. But sooner or later we will need to establish an association. [ID: 27]
Norms	Change in technical standards	So, we have standardized all our products, using international standards as the starting point so that we have managed to get them approved. And we started to create our own standards. These are the rules of the game that we have to take into account. [ID: 6]
	Change in government regulation (regional, national, intl.)	In Canada and I think in Australia – but I cannot recall if it's Australia – but definitely Canada, the government has made it a law to ensure that the employers have a duty of care for their employees (travelling) outside of the country.[ID: 57]
	Change in social conventions	In retrospect, it has been a positive surprise that people really went along with this new service. Just think, in effect we are saying: “We will decide what you will eat and what you will service to your children. And by the way, you cannot even choose when you will receive your food box: it will come on even weeks, sometime between 5 pm and 10 pm”. [ID: 64]

Appendix B

Element	Facets of change	Support from literature
Exchange	Change of tangible product/service properties Change in scope of offering (degree of bundling)	

	<p>Change of pricing logic (price carrier)</p> <p>Change of price level</p> <p>Change in how providers find customers</p> <p>Change in how customers find providers</p>	<ul style="list-style-type: none"> • Kumar et al. (2000): successful market-driving strategies come from a discontinuous leap in the value proposition. • Kim and Mauborgne (2009): reconstructionist strategies aimed at shaping the operating environment depend on the fit between value proposition (utility for the customers from the offering minus the price), profit proposition (revenues for the provider from the offering minus the costs of producing and delivering it), and people proposition (motivations and incentives for employees to support and implement the reconstructionist strategy). • Normann (1977): price bundling and unbundling and redefining the price carrier, i.e., what customer are paying for. • Callon and Muniesa (2005): markets are collective calculative devices through which parties objectify (create definable, delimited and stable properties that enable the transfer of property rights) the item being exchanged and singularize it (co-elaborate and qualify the characteristics; how they are similar and different to other goods). • Finch and Geiger (2010): show that market objects are malleable and allow for at least partial managerial control. • Demsetz (1998): Property rights theory distinguishes four types of rights to a resource which is being exchanged: the right to use the resource; the right to appropriate returns from exploiting the resource; the right to change the form, substance and place of the resource; and the right to transfer some or all of the aforementioned rights. • Hinterhuber and Liozu (2012): pricing logics can be altered by changing the property rights being exchanged (be they based on ownership or access) and by shifting the calculation basis (cost, competition, or customer-value). • Roth & Sotomayor (1992); Roth (2007): matching methods bring together buyers and sellers, facilitate sharing of information and let actors narrow down alternatives so they can make decisions. To function properly, markets should at least provide thickness, make it safe to reveal confidential information and act on it, and overcome congestion by giving parties time to make satisfactory choices.
Customers & use	<p>Change in how customers use the product/service</p> <p>Change in customer/user groups</p> <p>Change in what customers value/utility sought</p> <p>Change in infrastructure supporting use</p>	<ul style="list-style-type: none"> • Kumar et al. (2000): emphasize the role of customer education in market-driving strategies. • Clarke and Freytag (2008); Sausen, Tomczak and Herrmann (2005): markets can be defined in terms of segments of customers. • Tantalo and Priem (2016); Priem, Wenzel and Koch (2017): creating more value (utility) to customers and other stakeholders increases the size of the market. • Akrich (1992); Callon (1986); Latour (2005): the material infrastructure surrounding the network of actors as an essential managerial lever for market shaping and making. • Cochoy (2009): introduction of shopping carts and its implications for the American retail grocery market. • Burr (2014): ‘use-environment’ - development of road networks aided take-off of both bicycle and car markets. • Geels (2002): sociotechnical configuration of land-based personal transportation; Urry (2009). system of automobility.
Supply	<p>Change in number of providers</p> <p>Change in how providers interact and cooperate</p> <p>Change in the number of providers' suppliers/partners</p> <p>Change in the types of providers' suppliers/partners</p> <p>Change in how providers interact with suppliers/partners</p>	<ul style="list-style-type: none"> • Roth (2007, 2008): criterion of efficient markets: securing a sufficient number of buyers and particularly sellers. • Agarwal and Bayus (2002): take-off of new innovations always followed an increase in the number of firms providing that particular innovation. • Ritala, Golnam, and Wegmann (2014); Lee, Struben and Bingham (2018): collaboration among competing actors (‘coopetition’, ‘collective action’) is particularly typical during market formation. • Jaworski et al. (2000): changing market structure by deconstructing or constructing a network and applying functional modification for various actors. • Kumar et al. (2000): reconfiguring the distribution channels. • Möller and Halinen (1999); Geels, (2002); Gawer and Phillips (2013): a focal firm's network is not confined to its value chain. The network includes other, sometimes non-commercial, actors such as public authorities, research institutions and public interest groups. • Alderson (1957): industries evolve when the roles and functions performed by various players change. • Jaworski et al. (2000): changes in the roles performed by one or more actors (e.g., a distributor starts to assemble computers in addition to merely distributing them) can lead to market-level changes.
Representations	<p>Change in terminology used</p> <p>Change in descriptions used by media</p> <p>Change in market research and statistics</p>	

	Change in industry associations	<ul style="list-style-type: none"> • Kjellberg & Helgesson (2006); Diaz Ruiz (2013): market representations are arrangements of coherent but simplified illustrations of what a market is and how it works. • Rosa, Porac, Runser-Spanjol and Saxon (1999): what consumers and producers know about markets exists in shared knowledge structures: that markets exist “because market actors agree on their existence” (p. 66). • Granqvist, Grodal and Woolley (2013): firms apply three distinct labelling strategies: claiming (market membership), disassociating (from market membership) and hedging (selectively expressing market membership). • Azimont and Araujo (2007): four different strategies towards categories: strengthening the existing category boundaries, creating new categories by introducing new or renewed products, changing existing categories by repositioning products, or creating new categorization schemes for existing products. • Star and Griesemer (1989): boundary objects suggests that terms with sufficiently familiar structure for all intersecting social worlds to recognize them are likely to be adopted faster and have more staying power. • Diaz Ruiz (2013): market research can be performative (having the purpose of stabilizing a new or destabilizing an existing market) and are often created deliberately to serve a particular actor. • Kennedy (2008): importance of media coverage for emerging market systems. • Rinallo and Golfetto (2006): mirroring organizations (e.g., trade fairs and industry associations) act as a platform for ‘concertation’, the collective action of organizations aimed at moving economic events along a desired path.
Norms	Change in technical standards Change in government regulation (regional, national, intl.) Change in social conventions	<ul style="list-style-type: none"> • Vargo and Lusch (2016): markets are sets of culturally constituted institutional arrangements. • Gawer and Phillips (2013): influencing various standards and norms is a key element of ‘institutional work’. • Technological standards (Ferguson, 1996) and formal rules and laws (Coffee, 2000) share similarities as they are usually documented in writing and backed by official enforcement mechanisms, whose breach incurs a sanction. • Kjellberg and Helgesson (2006): norms and rules guiding the actions of market actors are a result of normalizing or ‘inscribing’ practices (c.f., Akrich and Latour, 1992). • Snow, Rochford, Worden, and Benford (1986): micromobilization in social movements - norms, beliefs and ideologies gain traction through frame bridging, frame amplification, frame extension, and frame transformation.

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