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Trends in manufacturing strategies: A longitudinal investigation of the International Manufacturing Strategy Survey

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Abstract

How have the competitive priorities of European manufacturers changed over the last 20 years? We investigate this question by conducting a longitudinal analysis of the International Manufacturing Strategy Survey database, holding datasets from 1992, 1996, 2000, 2005, 2009 and 2013. We highlight five trends in the data. First, *quality* and *dependability* remain the highest competitive priorities. Second, *cost* appears to be the most fluctuating competitive priority, and companies seem more concerned with costs during times of economic decline. Third, in general, *service* seems to be on a decline, but an increase in delivery *speed* offsets this tendency. Fourth, *flexibility* and *innovation* is gaining relative importance. Fifth, *sustainability* is among the least important competitive priorities and discontinues its growth trend in relative importance. We also comment on the longstanding debate between the trade-off model and cumulative models of competitive capabilities.

Keywords: Manufacturing strategy, Competitive priorities, IMSS

Introduction

Manufacturing firms need to decide how they want to compete in the market. Should the firm offer the highest quality products, the lowest cost, the fastest deliveries, the highest degree of customisation, the best after-sales service, the most innovative products, the most environmental-friendly solutions, the best social responsibility, or any combination of these? Being among the most important facets of manufacturing strategy, *competitive priorities* like these have been much debated in the operations management literature. Competitive priorities are the strategic preferences firms target to gain competitive advantage (Hayes and Wheelwright 1984; Leong et al. 1990). A limitation of the existing research is that the bulk of it focuses only on the four original competitive capabilities, namely cost, quality, delivery and flexibility. In the last twenty years, however, capabilities like customisation, service, innovation, environmental performance and social responsibility have gained importance. Therefore, our main research question asks if and how the competitive priorities of European manufacturing firms have changed over the last decades. To the best of our knowledge, there has been little or no research on such trends.

Investigating trends in the competitive priorities can also inform the longstanding debate between the trade-off and cumulative models of competitive capabilities; do companies see trade-offs between capabilities or do they believe that all be achieved cumulatively? The empirical evidences in the literature remain mixed. Although our data do not allow confirmation or falsification of either of the models, our second research question investigates which of the two models practitioners seem to prefer. The managers' rating of relative importance of competitive priorities can provide indication whether they *aim* to follow the trade-off model or cumulative capabilities model.

We analyse the changes of competitive capabilities using the European data from the six available datasets of the International Manufacturing Strategy Survey (IMSS). The IMSS is an international survey with research partners in more than 20 countries targeting manufacturing companies mainly in the machining, electronics, and automotive industries (Lindberg et al. 1998). Over the last decades, the IMSS has had a significant contribution to our understanding of manufacturing strategy and how it is practiced (e.g. Cagliano and Spina 2000; Gimenez et al. 2012; Laugen et al. 2005; Acur et al. 2003). After six rounds of data selection, the IMSS dataset is now a unique source for longitudinal research on operations strategy. It contains relative comparable data from more than 20 years, holding datasets from 1992, 1996, 2000, 2005, 2009 and 2013.

Literature review

A manufacturing strategy can be defined as "a pattern of decisions, both structural and infrastructural, which determine the capability of a manufacturing system and specify how it will operate to meet a set of manufacturing objectives which are consistent with overall business objectives" (Platts et al. 1998, p. 517). This definition highlights the central notion of competitive *priorities* and competitive *capabilities*. Competitive priorities are the objectives of how firms want to compete, whereas competitive capabilities is the realised operative skills (Rosenzweig and Easton 2010). Our research focuses on competitive priorities.

Competitive priorities have been much discussed in the literature (Ward et al. 1998). The word "priorities" is used because it is not practically possible to devote the same amount of attention and resources to all factors of performance. Instead, mangers must allocate scarce resources to develop a set of prioritised competitive capabilities (Hayes and Wheelwright 1984). A higher priority is given to those competitive capabilities that a firm believes it needs to develop in order to win orders in the market.

The four classical competitive priorities are arguably "low cost", "good quality", "short delivery times" and "high flexibility" (Ward et al. 1998; Boyer and Lewis 2002; Hallgren 2007). However, this original list has been expanded. To separate quick deliveries from accurate deliveries, authors have suggested including "dependability" as a distinctive competitive priority (Ferdows and De Meyer 1990; Noble 1995; Miller et al. 1994; Hayes and Wheelwright 1984). Following an increased focus on "servitization" of manufacturing (Baines et al. 2009; Schmenner 2009; Vandermerwe 1988; Neely 2008), "service" has been added as a competitive priority (Miller et al. 1994; Noble 1995; Kim and Arnold 1993). Moreover, "innovation" has been suggested (Miltenburg 1995; Noble 1995; Leong et al. 1990). Over the last twenty years, two new competitive priorities have gained much attention: "sustainability" and "responsibility", which we introduce in more detail in the two next paragraphs.

Jiménez and Lorente (2001) argue for the need to include environmental performance, or *sustainability*, as a competitive priority. The Brundtland Report, *Our Common Future* (WCED 1987), put sustainability on the agenda. It defined sustainable development as "a development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED 1987, p. 43). Since then, there has been an evidential growth of environmental programs and certifications in practice, and a growing body of literature on sustainability in operations management (Corbett and Klassen 2006). The five climate reports published in 1990, 1995, 2001, 2007 and 2013

by United Nations' Intergovernmental Panel on Climate Change (IPCC) continue to call for action on environmental issues. Today, sustainability (or "green") is an important competitive priority.

Another competitive priority, Corporate Social Responsibility (CSR), was established as a definite strategic issue in the 2000s (Moura-Leite and Padgett 2011; Porter and Kramer 2006; Gimenez et al. 2012). In a report by The World Bank (Moura-Leite and Padgett 2011, p. 17), 61 % of multinational companies reported that "CSR issues are at least as influential as more traditional factors (for example, cost, quality, delivery)". Porter and Kramer (2006) found that 64 % of the largest multinational companies published CSR reports in 2005, and concluded that "CSR has emerged as an inescapable priority for business leaders in every country" (p. 78).

To summarise, Table 1 lists the usually referred competitive priorities in the literature.

Table 1. Different competitive priorities across representative studies and IMSS VI.

Authors / Competitive Priority	Ward et al. (1998)	Boyer and Lewis (2002)	Hallgren (2007)	Hayes and Wheelwright (1984)	Ferdows and De Meyer (1990)	Kim and Arnold (1993)	Miller et al. (1994)	Miltenburg (1995)	Noble (1995)	Leong et al. (1990)	Jiménez and Lorente (2001)	*IMSS (2013)*
Cost	X	X	X	X	X	X	X	X	X	X	X	*X*
Quality	X	X	X	X	X	X	X	X	X	X	X	*X*
Speed / Delivery	X	X	X	X	X	X	X	X	X	X	X	*X*
Flexibility	X	X	X			X	X	X	X	X		*X*
Dependability				X	X		X	X	X			*X*
Service						X	X				X	*X*
Innovation								X	X	X		*X*
Sustainability											X	*X*
Responsibility												*X*

The trade-off versus cumulative capabilities models

A central discussion in the literature on competitive capabilities has been whether companies must compromise between them or if they can be developed in a cumulative pattern. For example, the trade-off model suggests that superior quality or delivery performances are incompatible with achieving low cost (Skinner 1969). Testing this assumption, Boyer and Lewis (2002) concluded that managers still see trade-offs as important. However, in a meta-review of the literature on competitive priorities, Rosenzweig and Easton (2010) found low support in the empirical literature for a trade-off model. One critique is that intensifying competition has left it impossible to ignore any of the

competitive capabilities. In addition, the trade-off model has been criticised for being reactive to constantly shifting market environments.

Nakane (1986) was the first to suggest that the trade-off model is misleading. With evidence from Japanese plants, he argued that competitive capabilities could be built cumulatively and together. For example, Toyota's proven capability to produce cars "of the highest quality, on the shortest time, and for the lowest cost" (Krafcik 1988) made authors question the validity of the trade-off model. Ferdows and De Meyer (1990) proposed the "sandcone model" that explains how manufacturers can build lasting improvements by focusing sequentially on quality first, then dependability, then flexibility, and finally cost reduction. The analogy to a sandcone illustrates that, as the firm climbs the stages of higher-level capabilities, it also has to pour sand at the base (for example, keep investing more in quality to achieve higher levels of delivery performance). Noble (1995) discussed the cumulative model as "a pyramid of competitive capabilities" growing from quality at the base, then dependability, delivery, cost, flexibility and to innovation at the top. If the cumulative capabilities model is adopted directly in industry, we would expect managers to—consistently over time—rate quality as a top competitive priority, with the other priorities in a decreasing order.

Also the cumulative capability model has been subject to testing (Bortolotti et al. 2015; Ferdows and Thurnheer 2011; Hallgren et al. 2011; Corbett and Clay Whybark 2001; Rosenzweig and Easton 2010; Rosenzweig and Roth 2004; Peng et al. 2011; Noble 1995; Vastag and Whybark 2003). In their original paper, Ferdows and De Meyer (1990) found support for quality as the basic capability, but did not provide evidence for the sequence of the others. Rosenzweig and Roth (2004) replicated the original sandcone study and found evidence for both a cumulative and sequential pattern taking place. Noble (1995) found some evidence of the cumulative model, but with geographic differences. Evidence from IMSS (2013) showed that firms rather seem to build multiple capabilities simultaneously and dynamically. Similarly, in a survey of 211 plants, Hallgren et al. (2011) found a hybrid model to fit better than a cumulative model. Only, quality was found to be a leading indicator of higher levels of delivery performance, whereas flexibility and cost efficiency are built in parallel. Thus, while being celebrated for being prescriptive and proactive, the cumulative model lacks broad empirical evidence (at least beyond quality as a basis for the other priorities). In summary, the debate between the trade-off model and cumulative models remain with mixed evidence.

Methodology

We analyse how the competitive priorities for European manufacturers have changed over the last twenty years by performing a longitudinal analysis of the International Manufacturing Strategy Survey (IMSS) database. IMSS includes datasets from 1992, 1996, 2000, 2005, 2009 and 2013. We focus exclusively on the part of the surveys that deal with competitive priorities.

About the IMSS

The IMSS network was established with its first data gathering in 1992 ("IMSS I"). The original idea was to investigate the connection from strategy via investments and operations, to performance in manufacturing industries. Figure 1 shows the focus areas in IMSS (Cagliano 1998). Competitive capabilities (or priorities) have been central in all data collections.

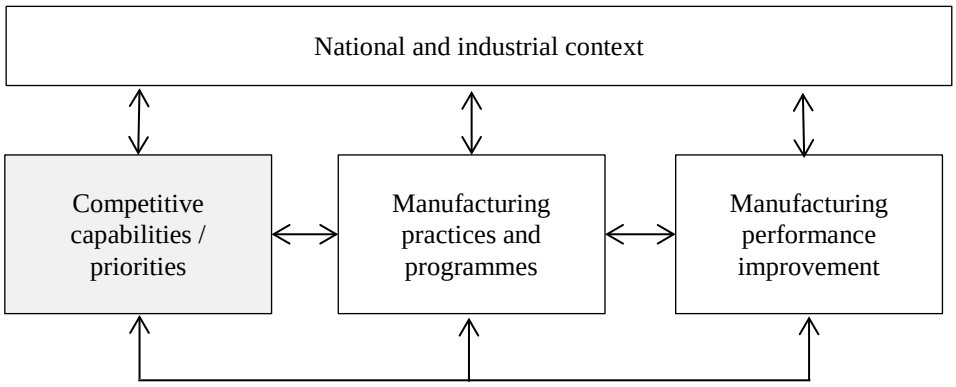

Fig. 1. IMSS focus areas (Cagliano 1998).

One key objective of IMSS was to follow the developments in industry and see how dissemination of ideas and industrial competitiveness developed over time. Hence, the subsequent IMSS data gathering in 1996, 2000, 2005, 2009 and 2013 (we also refer to these as IMSS II, III, IV, V and VI, respectively). These next questionnaires both tried to keep as many questions as possible to enable longitudinal trend analyses and to capture new trends. These new trends or ideas can be seen both from the arrival of new topics in the questionnaire and from the data gathered. A brief overview shows a transitional change from emphasis on technology, via lean and human factors (Sun and Frick 1999), to more strategy-, supply chain- and global oriented issues in the later questionnaires (IMSS 2013). It is likely that these changes in the questionnaire reflect a change in focus also in the manufacturing industries (because the involved researchers have strived to include trends and practices in industry). Table 2 gives the descriptive statistics for the world- and European data collected in IMSS I through VI. Note that this research uses the European data only (N=2497).

Table 2. Descriptive statistics IMSS I-VI.

Survey	Year	ISIC*	World data		European data	
			# Countries	N	# Countries (ISO 3166 alpha-2)	n
IMSS I	1992	381-385	20	600	12 (AT, BE, DE, DK, ES, FI, GB, IT, NL, NO, PT, SE)	343
IMSS II	1996	381-385	26	703	11 (DE, DK, ES, FI, FR, GB, HU, IT, NL, NO, SE)	306
IMSS III	2000	381-385	23	558	12 (BE, DE, DK, ES, GB, IE, IT, HR, HU, NL, NO, SE)	425
IMSS IV	2005	28-35 (Rev 3.1)	23	709	15 (BE, DE, DK, EE, GB, GR, HU, IE, IL, IT, NL, NO, PT, SE, TR)	478
IMSS V	2009	28-35 (Rev 3.1)	21	750	14 (BE, CH, DE, DK, EE, ES, GB, HU, IE, IT, NL, PT, RO)	445
IMSS VI	2013	25-30 (Rev 4.0)	19	843	14 (BE, CH, DE, DK, ES, FI, HU, IT, NL, NO, PT, RO, SE, SI)	500

*ISIC codes are regularly revised. All IMSS versions target similar manufacturing industries: e.g., fabricated metal products; computers, electronic and optical products; electrical equipment; machinery and equipment; motor vehicles and other transport equipment.

Measures

Table 3 gives the constructs for the competitive priorities that we use in this study. Generally, the items for competitive capabilities are largely similar and comparable across the six versions, with three exceptions that we need to take care of in our research design. First, the different versions of the IMSS surveys contain different number of competitive priorities, ranging from six in IMSS I to fifteen in IMSS VI. Second, there are slight differences in the items used for cost, quality, service and responsibility (see notes in Table 3). Third, IMSS I through IV ask the respondent to judge the *current* degree of importance of the item, whereas IMSS V and VI ask the degree of importance *over the last three years*. All versions ask the respondent to answer the question on a Likert scale from "1 – not important" to "5 – very important".

Table 3. Constructs for competitive priorities across IMSS I-VI.

Priorities	**Item**	**I**	**II[1]**	**III[1]**	**IV**	**V**	**VI[6]**
Cost	Lower selling prices	X[2]	X	X	X	X	X
Quality	Better product design and quality	X	X[3]	X	X	X	X
	Better conformance to customer specifications			X	X	X	X
Dependability	More reliable/dependable deliveries	X	X	X	X	X	X
Speed	Faster deliveries	X	X	X	X	X	X

Service	Superior customer service (after-sales and/or technical support)	X	X	X	X	X	X[4]
Flexibility	Greater order size flexibility		X	X	X	X	X
	Wider product range	X	X	X	X	X	X
Innovation	Offer new products more frequently		X	X	X	X	X
	Offer products that are more innovative				X	X	X
Sustainability	More environmentally sound products and processes			X	X	X	X
Responsibility	Committed social responsibility					X	X[5]

IMSS I, II, III, IV: "Consider the current degree of importance of the following goals to (win orders from) your major customers"

IMSS V, VI: "Consider the importance—in the last three years—of the following attributes to win orders from your major customers"

IMSS II-IV had a separate question on *change* of each parameter's importance over the last three years that we do no use.

Scale IMSS I, II, III, IV, V, VI: 1 not important - 5 very important

Notes on variations to items:

[1] Includes a separate item for "Other (please write in) (IMSS II, III)

[2] Cost = "Lower manufacturing cost" (IMSS I)

[3] IMSS II also includes an additional question for "Manufacturing quality" which we do not include

[4] Two questions for Service: "After-sales and/or technical support" and "Training, information, helpdesk" (IMSS VI). We use only the first one.

[5] Social responsibility = "Higher contribution to the development and welfare of the society" (IMSS VI)

[6] IMSS VI also includes an additional question for Safety ("More safe and health respectful processes") which we do not include.

[6] IMSS VI also includes an additional question on Flexibility ("Offer more product customisation") which we do not include.

Table 4 gives the average actual scores (1-5) and standard deviations of the competitive priorities in each version of IMSS.

Table 4. Actual scores for competitive priorities (averages and standard deviations) IMSS I-VI.

IMSS version	**IMSS I**		**IMSS II**		**IMSS III**		**IMSS IV**		**IMSS V**		**IMSS VI**	
Priorities	**Mean**	**σx**	**Mean**	**σx**	**Mean**	**σx**	**Mean**	**σx**	**Mean**	**σx**	**Mean**	**σx**
Cost	4,25	0,89	3,65	1,05	3,70	1,07	3,97	0,95	3,81	1,07	3,76	1,10
Quality	4,52	0,73	4,22	0,83	4,15	0,89	4,18	0,78	4,12	0,88	4,19	0,83
Dependability	4,21	0,90	4,13	0,82	4,07	0,89	4,18	0,79	3,94	0,96	4,11	0,83
Speed	4,11	0,94	3,97	0,90	3,97	0,89	3,89	0,88	3,68	1,08	3,92	0,93
Service	4,40	0,85	3,91	0,89	3,84	1,03	3,79	0,96	3,66	1,12	3,55	1,08
Flexibility	3,31	0,95	3,33	1,15	3,35	1,14	3,39	1,04	3,15	1,17	3,38	1,06
Innovation	-	-	3,24	1,10	3,23	1,15	3,36	1,12	3,12	1,17	3,33	1,09
Sustainability	-	-	-	-	2,90	1,15	3,18	1,09	3,00	1,20	3,08	1,06
Responsibility	-	-	-	-	-	-	-	-	2,68	1,22	2,77	1,05
Total	*4,13*	*1,00*	*3,72*	*1,06*	*3,68*	*1,11*	*3,72*	*1,04*	*3,47*	*1,19*	*3,59*	*1,10*

To get comparable data across the six versions we normalise the data using z-scores and compare their change in relative importance. The standard z-score is the number of standard deviations an observation is above the mean for its population (a population is here drawn from all rated items in

one version of the IMSS survey, see Table 3). Focusing on the developments in absolute numbers would be erroneous because respondents to the survey in reality rate the relative importance of the competitive priorities and do not know the numbers from previous years. Normalising the data also reduces the possible misleading effect of the increasing number of items to be evaluated, because we then focus on the relative importance of the competitive priority in each sample and not their absolute values. Finally, normalising the data reduces the concern that some of the surveys asked for the current importance of the priority (as in IMSS I-IV) and other surveys asked for the importance over the last three years (as in IMMS V-VI).

Findings and discussion

Figure 2 shows the development of the relative importance of the select competitive priorities from IMSS I through IMSS VI.

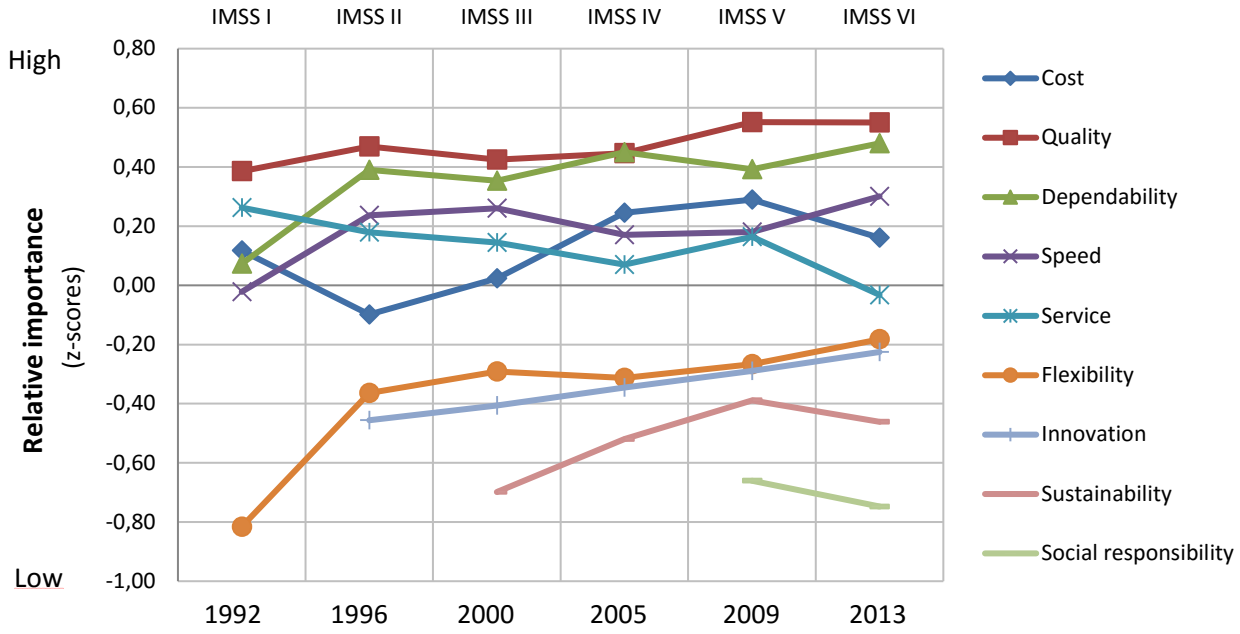

Fig. 2. Change in relative importance for competitive capabilities IMSS I-VI (z-scores).

The patterns reveal interesting discussion points. We discuss five trends:

- Trend 1: Quality and dependability remain the highest competitive priorities.
- Trend 2: Cost is the most fluctuating competitive priority.
- Trend 3: Service is on a decline, but offset by speed.
- Trend 4: Flexibility and innovation is gaining importance.
- Trend 5: Sustainability is not continuing its growth in relative importance.

Trend 1: Quality and dependability remain the highest competitive priorities

Quality is reported to be the highest ranked priority across all studies from IMSS I through VI. Aligned to the idea of the sandcone model (Ferdows and De Meyer 1990), quality is followed by dependability (i.e., accurate deliveries to customers). Quality and dependability are also the two priorities with the highest actual scores and lowest standard variations across the datasets (c.f. Table 4). Hence, the IMSS data confirms, "quality comes first" in industry (Crosby 1979; Ferdows and De Meyer 1990; Hallgren et al. 2011). It is also interesting to see that quality and dependability has strengthened their positions as the highest competitive priorities over the last two decades. Adding trend lines to our data (not shown), it is clear that the focus on these two competitive capabilities is predicted to continue in the future.

Trend 2: Cost is the most fluctuating capability

Cost is the competitive capability with most relative fluctuation. Because this fluctuation can be related to general economic developments, we compare the changes in relative importance of cost with changes in gross domestic product (GDP) in the Eurozone since 1990 (Figure 3). We find that the relative focus on cost is highest after periods where GDP has fallen substantially for more than two years in a row (1992, 2005 and 2009). Although we cannot test the relationship statistically, these opposite fluctuating patterns may be expected: cost tends to become a more important factor in times of low economic growth.

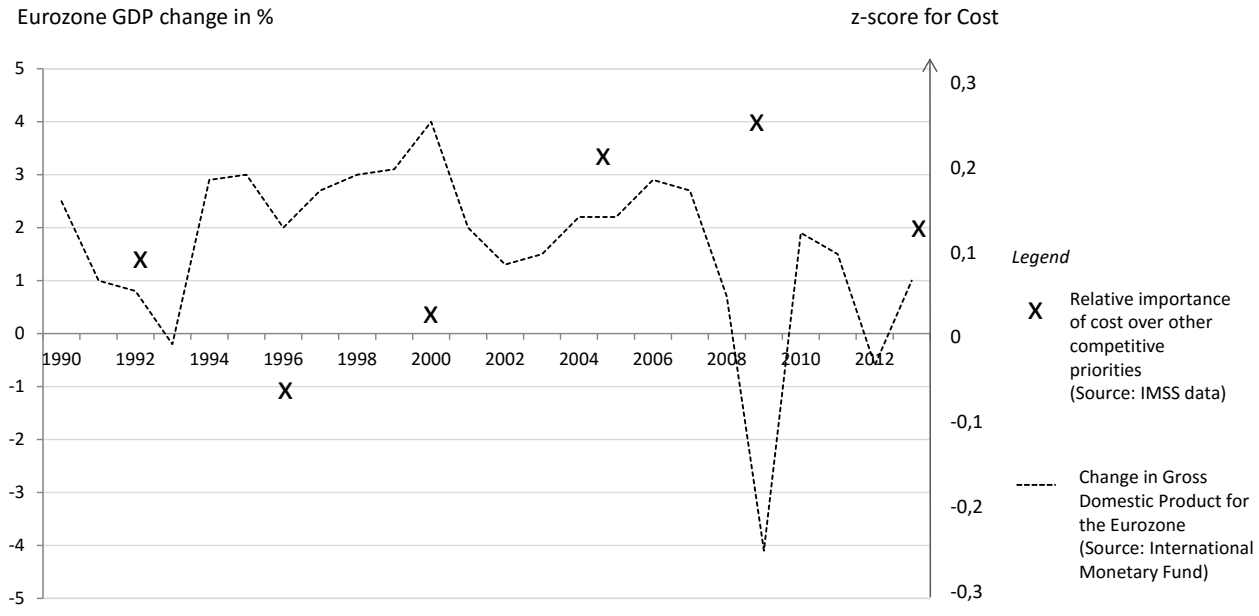

Fig. 3. Changes in GDP for the Eurozone versus importance of cost as a competitive priority.

In Figure 2, we can also see that the relative focus on speed and dependability declines as the focus on cost increases (and vice versa). Looking at the actual scores around the financial crisis 2008-2009 (Table 4), we also see that cost got its second all-time highest score (3.81) whereas speed and dependability got their all-time lowest score (3.68 and 3.94, respectively). Table 4 also shows that the average actual score for all priorities are all-time low for IMSS V in 2009 (3.47) compared to IMSS I-IV and VI. This is an indication of companies making trade-offs between competitive priorities. Like Skinner (1969) suggested, and Boyer and Lewis (2002) confirmed, companies allocate scarce resources towards a certain set of priorities. Based on the IMSS data, we propose that the trade-off model is more apparent in times of economic decline, whereas the cumulative model is more used in stable and growing environments.

Trend 3: Service is on a decline, but offset by speed

The data shows that the relative importance of service seems to be on an ongoing negative development (Figure 2). In addition, the actual scores of service have been on a decline through all versions of IMSS (Table 4). However, we can also see that the decline in service as a competitive priority is somewhat offset by increases in speed. One can argue that faster deliveries is one way to deliver superior service to customers.

Considering the research that emphasise service as a new frontier for competitive advantage in manufacturing industries (Miller et al. 1994; Schmenner 2009), the slight decline of service as a competitive priority may be surprising. A reason for the declining interest of service may be due to sampling bias of companies in IMSS, which targets classical machining and assembly industries. As "servitization" has become more important for these industries over the last 20 years (Neely 2008), they may have established own service organisations. In other words, the service function may have moved gradually out of the manufacturing unit (that answers the IMSS questionnaire).

Trend 4: Flexibility and innovation is gaining importance

A fourth trend in the data is that the relative importance of flexibility and innovation is increasing, but slowly. There are perhaps several reasonable explanations for this trend. First, considering the cumulative model of competitive priorities (Rosenzweig and Easton 2010; Noble 1995; Ferdows and De Meyer 1990) (and taking into account twenty years of cumulative capability building) a gradual shift towards these priorities could be expected. Second, in order to compete against low-cost competition from Asian economies, European manufacturers increasingly shift towards customised

and innovative products (European Commission 2013). Third, there is a general trend towards quicker product life cycles and an increasing demand for more customisation.

Trend 5: Sustainability is not continuing its growing importance

A fifth trend is that the growth in the relative importance of sustainability as a competitive priority from IMSS III through V discontinues in IMSS VI. Table 4 shows that it scores around 3.0 (on the scale from 1 "not important" to 5 "very important") in all versions of IMSS where it was included, which leaves it as the least importance competitive priority (together with social responsibility). In addition, social responsibility experiences a reduction in relative importance from IMSS V to VI. With the increasing importance of both sustainability and CSR in the literature (Jiménez and Lorente 2001; Moura-Leite and Padgett 2011; Porter and Kramer 2006; Corbett and Klassen 2006), this is perhaps both surprising and disappointing.

We can only speculate about the reasons for the low and declining importance of sustainability as a competitive priority. One worrisome proposition might be that the attention to environmental issues has declined in the last three years. In December 2007, IPCC shared the Nobel Peace Prize with former U.S. Vice-President Al Gore for their work on climate change. The fourth IPCC report was published in 2007 and the fifth was published in 2013 after the IMSS VI data collection. Is it possible that the sustainability issue—while on a rise up to IMSS V—has suffered under an attention gap between 2009 and 2013 (after the financial crisis)? A more hopeful hypothesis might be that the recent slowdown of sustainability and social responsibility is because these issues have moved into legislation in many countries, and become order-qualifying standards and not competitive order-winning issues. Sustainability and social responsibility have yet not been included in recent studies of competitive capabilities, which clearly provide opportunities for more research in the area.

A note on the debate on trade-offs versus cumulative capabilities

Taken the above discussion together, there are indications that European manufacturers use *both* the trade-off model and the cumulative model. First, the data shows that the relative importance of competitive priorities has not changed much over the last twenty years (with exception of cost and service). Because the competitive priorities reported in IMSS seem to largely follow the ranking suggested in cumulative models (Noble 1995), it can be interpreted as a support for them. Contrasting the sandcone model of Ferdows and De Meyer (1990)—but in accordance with the first cumulative model of Nakane (1986)—we find that "cost" is consistently rated as more important than flexibility. We also find that the ranking of some of the priorities is fluctuating (in particular "cost" and

"service"), which we can see as a sign of existing trade-offs. Companies adjust their competitive priorities to changing market requirements. In particular, we see that cost seems to experience an upsurge in relative and absolute importance (on the expense of speed and dependability) in times of economic decline.

Conclusions

We have used the six available databases from the IMSS project (1992, 1996, 2000, 2005, 2009 and 2013) to investigate changes in competitive priorities of European manufacturers over the last 20 years. The IMSS databases provide a unique opportunity for longitudinal analyses of changing competitive priorities. We contribute to literature and practice in three ways. First, we summarise several trends: Not surprisingly, quality and dependability have stayed at top priorities for last twenty years followed by a shifting ranking of speed and cost. More unexpected is the continuous decrease in service that partly is offset by increases in speed, flexibility and innovation. Second, we warn that sustainability and social responsibility is far from moving to the top of the agenda among European manufacturers. Building capabilities in sustainability (and responsibility) is ranked at the bottom and show a declining trend in the latest IMSS data collection. Third, we add longitudinal evidence to the long-standing debate between the trade-off model and cumulative models of competitive priorities. We conclude that both perspectives have merit in the priorities of managers, hypothesising that trade-offs are more present in times of economic decline. Future research could propose and test new dynamic and hybrid models of competitive priorities.

Limitations

Our analyses are not without limitations. First, there are limitations related to the IMSS database (see Frick (2006) for a thorough discussion of reliability of doing longitudinal analyses on IMSS data). The limitations that usually apply to the IMSS databases also apply to this research; most importantly, the single-respondent bias. A second limitation is that the companies that have answered the IMSS survey have changed over the years. This is also the case for the countries participating. However, all companies belong to the same ISIC codes, and we limit our analyses to the European sample. Even if the companies and countries have changed, a similar sampling profile and size is kept from set to set. A third limitation is small variations in terminology (and understanding of terminology) across the IMSS databases (see notes in Table 3 for details of variations in our data). We limit our analyses to one part of IMSS that has stayed relatively stable across all versions. Despite its limitations, the rich IMSS database now provides unique opportunities for longitudinal analyses.

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