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The incompatibility of proactive market orientation and postponement strategy in product differentiation

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Abstract

Purpose – Previous studies have found that a proactive market orientation (PMO) has a positive effect on product differentiation and innovation and that the effect is contingent on various factors. However, the influence of logistics on the positive relationship between PMO and product differentiation has received scant attention in marketing research. To fill this research gap, this paper aims to introduce the concept of postponement as a basic logistics strategy, currently used by many firms, and examine the interaction effect of PMO and postponement on new product differentiation.

Design/methodology/approach – Drawing on the exploration–exploitation literature, the authors considered PMO and postponement as types of exploration and exploitation, respectively. The authors hypothesized that postponement hampers the positive effect of PMO on product differentiation. The authors tested the hypotheses empirically by applying ordinary least squares regression to a sample of 187 brand managers in the Japanese apparel industry.

Findings – PMO is positively related to product differentiation, although the relationship is weakened when design and production systems are postponed, that is, when postponement hinders product differentiation.

Originality/value – Previous studies have examined market orientation and postponement (logistics) separately. However, referring to the exploration–exploitation literature, the authors built a conceptual and empirical bridge between market orientation and logistics management and proposed that this configuration is important for product differentiation.

Keywords Exploration, Exploitation, Postponement, Product differentiation, Proactive market orientation (PMO)

Paper type Research paper

1. Introduction

When conducting their marketing activities, firms must attempt to satisfy customer needs, respond to competition and integrate their activities throughout the organization. This marketing approach and practice has been conceptualized as a “market orientation” (MO) (Kohli and Jaworski, 1990; Narver and Slater, 1990). MO is defined as “the organizationwide generation of market intelligence pertaining to current and future customer needs, dissemination of the intelligence across departments, and organizationwide responsiveness to it” (Kohli and Jaworski, 1990, p. 6). Drawing on the MO concept, marketing researchers have conducted considerable studies: business strategy (Frambach *et al.*, 2003; Homburg *et al.*, 2004), product performance (Carbonell and Escudero, 2010; Im and Workman, 2004) and innovation (Atuahene-Gima, 1996; Han *et al.*, 1998).

Although MO is considered a core predictor of product performance and innovation, several studies have questioned

its effectiveness. In particular, they have argued that passive adaptation to customer needs can constrain innovativeness (Berthon *et al.*, 1999; Christensen and Bower, 1996; Hamel and Prahalad, 1991). Marketing researchers have addressed this skepticism by extending the concept of MO. Narver *et al.* (2004) stated that:

[...] the disagreement about the relationship between market orientation and marketplace innovation is due to a too narrow understanding of market orientation – specifically, conceiving of market orientation as only responsive market orientation (RMO) (p. 335).

They advocated a “proactive market orientation” (PMO), as a subset of MO, conceived as an organizational culture wherein

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firms value the discovery and satisfaction of latent needs (Herhausen, 2016; Lichtenthaler, 2016; Narver *et al.*, 2004; Shashishekar *et al.*, 2022; Yannopoulos *et al.*, 2012). Similarly, Jaworski *et al.* (2000) delineated “market-driven” and “driving-market” MO, concluding that MO is inherently more than a passive adaptation to the market.

Following the work of Jaworski *et al.* (2000) and Narver *et al.* (2004), marketing researchers have investigated whether firms’ PMO contributes to their product performance and innovation. Narver *et al.* (2004) found that PMO, unlike RMO, had a significant positive correlation with new product success. Bodlaj *et al.* (2012) and Zhang and Duan (2010) suggested that PMO had a stronger effect on product innovation than RMO. Other studies have found that the effectiveness of PMO is contingent on environmental and intra-/interorganizational factors (see Table 1).

Importantly, previous studies have discounted logistics as a critical factor moderating PMO effectiveness. Logistics includes not only the value delivery function but also activities that affect how products are designed and produced through market information access (Bowersox *et al.*, 1999; Lim *et al.*, 2017; Pero *et al.*, 2010; Pratavia *et al.*, 2020). Logistics is strongly associated with adaptation to customer needs and the development of new products. Nonetheless, few studies have examined the impact of PMO and logistics configuration on product performance.

To fill this research gap, we focused on postponement as a fundamental principle of logistics activities. Postponement is a logistics strategy in which firms delay decision-making concerning product design and/or production as much as possible to mitigate demand uncertainty (Alderson, 1957; Bucklin, 1965; Pagh and Cooper, 1998; Yang *et al.*, 2004a; Yang *et al.*, 2004b). Our theoretical framework draws on the exploration–exploitation literature to explore the configuration of PMO and postponement (Cohen and Levinthal, 1990; Levinthal and March, 1993; March, 1991). PMO reflects an organizational culture in which firms distance themselves from current market trends and are involved in the search for distant knowledge (Lichtenthaler, 2016; Wang and Liu, 2020). Therefore, PMO is considered a form of exploration. Conversely, a postponement strategy reflects firms’ willingness to adapt to current market trends by adjusting and refining existing products (Aftab *et al.*, 2017; Chaudhry and Hodge, 2012; Yang *et al.*, 2004a). Thus, a postponement strategy is considered a form of exploitation. Because of the perceived incompatibility of exploration and exploitation (Gupta *et al.*, 2006; He and Wong, 2004; Stettner and Lavie, 2014), PMO and postponement are also considered contradictory, especially when firms engage in product differentiation. Thus, we hypothesized that the positive effect of PMO on new product differentiation (performance) is negatively moderated by a postponement strategy. The hypothesis, which was empirically tested using data collected from Japanese apparel firms, was supported. The Japanese apparel industry is not only required to overcome commoditization and pursue differentiation, but it has also made progress regarding the postponement of design and production functions. Hence, it is an ideal industry for an investigation of the interaction effect of PMO and postponement on new product differentiation.

This study contributes to the literature in the following ways. First, its findings advance understanding of the effectiveness of

PMO. Previous studies have found that PMO has a positive impact on differentiation and innovation (Cai *et al.*, 2015; Li *et al.*, 2008; Shashishekar *et al.*, 2022; Zhang and Duan, 2010), which is moderated by environmental and intra-/inter-organizational factors (see Table 1). However, the moderating effects of logistics (postponement of design and production functions) have rarely been examined despite the effect of logistics on product performance. Thus, we have opened up a new avenue of PMO-related research.

Second, we argue that the alignment of MO and logistics can be reasonably explained by the exploration–exploitation literature (Gupta *et al.*, 2006; He and Wong, 2004; March, 1991; Stettner and Lavie, 2014). Previous studies have examined MO and postponement separately: the former in terms of organizational culture and the latter in relation to logistics efficiency (Yang *et al.*, 2004a). Drawing on the exploration–exploitation literature, we built a conceptual and empirical bridge between organizational culture and logistics.

Finally, we empirically demonstrate that PMO has a positive effect on product differentiation, and this positive effect is mitigated by a postponement strategy. These results suggest that the configuration of organizational culture and logistics is critical for successful product differentiation (Ganji *et al.*, 2018; Yang *et al.*, 2004a). From a practical perspective, we suggest that if differentiation matters for firms, constraining the degree of postponement will also be important.

The rest of this paper is organized as follows. We next present the theoretical background and our hypotheses in Section 2. Subsequently, we present our methodology and the results of the empirical analysis in Section 3 and 4. We conclude with the implications and limitations of the study in Section 5.

2. Conceptual framework

2.1 Theoretical background

Since Jaworski *et al.* (2000) and Narver *et al.* (2004) conducted pioneering research on PMO, many studies have examined the factors moderating PMO effectiveness. Table 1 provides a summary of the main findings of these studies. It shows that they have focused on environmental, organizational and interorganizational factors as moderating variables.

The factors moderating PMO effectiveness themselves merit research attention. An assessment of the impacts of environmental factors could help to answer the question of whether all firms should strengthen their PMO. Tsai *et al.* (2008) suggested that PMO is effective when high levels of technological turbulence and competitive intensity exist, arguing that PMO is not necessary when these levels are low. In addition, Atuahene-Gima *et al.* (2005), Li *et al.* (2008) and others found that PMO effectiveness is contingent on internal organizational factors. Baker and Sinkula (2005) argued that linkages between MO and other resources/activities are critical for fully realizing the positive effects of MO. When a firm is faced with a market environment that requires PMO, simply strengthening PMO is not enough; firms must consider the configurations of PMO and organizational factors.

Although previous studies have expanded on the contingency view of PMO, they have discounted logistics as the critical organizational factor that can influence PMO effectiveness. Logistics is a:

Table 1 Summary of relevant studies and the present study

Author(s)	Research setting	Moderating variable(s)	Findings
Environmental factors			
Tsai et al. (2008)	High-tech firms in Taiwan	Technological turbulence Competitive intensity	Excessive PMO negatively impacts new product performance, but the impact is mitigated when technological turbulence and competitive intensity levels are high
Zhang and Duan (2010)	Manufacturing firms in China	Technological turbulence Market turbulence	PMO is positively related to product innovation performance. Technological turbulence and market turbulence positively moderate the relationship between PMO and product innovation performance
Blocker et al. (2011)	Business customers in India, Singapore, Sweden, the UK and the USA	Competitive intensity (n.s.) Customer value change intensity (n.s.) Global relationship scope Transnationality	PMO has a positive effect on customer perceived value. The scope of global relationships and transnationality positively moderate the relationship between PMO and customer perceived value
Hartono (2013)	Batik industry in Indonesia	Market turbulence (n.s.) Competitive intensity (n.s.)	PMO has a positive impact on business performance
Bodlaj et al. (2012)	Firms operating in a European country	Market changes (n.s.)	PMO has a positive impact on innovation success
Cai et al. (2015)	New venture firms in China	Technological changes (n.s.) Entrepreneurial support policies (ESP)	PMO has a positive impact on radical innovation. ESP negatively moderates the relationship between PMO and radical innovation
Organizational factors			
Atuahene-Gima et al. (2005)	US firms	Strategic mission rigidity Learning orientation Marketing's relative power Strategic consensus (n.s.)	There is an inverted U-shaped relationship between PMO and new product program performance. The positive effect of PMO (linear term) on new product program performance is strengthened when learning orientation and marketing power are high and when the strategic mission rigidity is low
Li et al. (2008)	High-tech firms in Taiwan	Strategic mission rigidity Learning orientation Strategic consensus (n.s.)	PMO has a positive effect on radical innovations. Strategic mission rigidity weakens the effect, and learning orientation strengthens it
Yannopoulos et al. (2012)	Canadian high-tech firms	Market opportunity appraisal (n.s.) Exploitative learning Exploratory learning Exploitation Exploration	PMO has a positive effect on new product performance. Exploratory learning strengthens this effect, whereas exploitative learning weakens it
Wei et al. (2014)	Chinese firms	Supply chain influence (SCI) Intrafirm causal ambiguity	In a firm with a PMO, exploitation has an insignificant effect, whereas exploration has a positive effect on firm performance
Lim et al. (2017)	US firms		PMO has a positive effect on firm performance, and SCI strengthens this effect
Lakshman et al. (2017)	Firms in India		PMO has a positive effect on innovation capability, but intrafirm causal ambiguity weakens this effect
Yang et al. (2020)	Chinese firms	Resource flexibility Coordination flexibility	PMO has a positive effect on business model innovation. Resource flexibility weakens this effect, whereas coordination flexibility strengthens it
Interorganizational factors			
Wang and Liu (2020)	Services outsourcing firms in China	Contractual governance (CG) Relational governance (RG)	PMO has a positive effect on service capability. CG weakens this effect. RG positively moderates the relationship between PMO and service capability, but the efficacy of PMO is reduced if the level of RG is too high
Lin et al. (2021)	OEM suppliers in Taiwan's IT industry	Supplier–customer electronic integration (SCEI)	PMO positively affects radical product innovation. SCEI positively moderates this effect
Present study	Japanese apparel firms	Postponement (logistics strategy in which firms delay decision-making regarding design and/or production)	PMO is positively related to product differentiation, but the relationship is weakened when design and production systems are postponed

[...] part of supply chain management that plans, implements, and controls the efficient, effective forward and reverse flow and storage of goods, services, and related information between the point of origin and the point of consumption in order to meet customer requirements (CSCMP, 2007).

Logistics includes not only the value delivery function but also activities that affect how products are designed and produced through market information access (Bowersox *et al.*, 1999; Lim *et al.*, 2017; Pero *et al.*, 2010; Prataviera *et al.*, 2020).

Despite the strong connection of logistics to strategies for adapting to customer needs and developing new products, few studies have examined the impact of PMO and logistics configuration on product performance. Exceptionally, Lim *et al.* (2017) focused on supply chain management, which extends logistics to interorganizational relationships. Their findings indicated that supply chain influence (SCI) strengthens the positive impact of PMO on firm performance (see Table 1). According to these authors:

SCI is the ability of supply chain to influence the firm's strategic direction and priorities and to secure firm resources to achieve a competitive advantage at the expense of other functional areas (2017, p. 914),

with high SCI enabling PMO activities to meet potential customer needs. However, it is unclear why an emphasis on supply chain management would support PMO effectiveness. In a similar vein, Sezen (2005) argued that coordinated marketing and logistics enhance overall business performance but did not discuss the configuration of specific modes of marketing and logistics activities.

To the best of our knowledge, no study has examined the compatibility of specific logistics strategies and PMOs beyond the general issue of marketing–logistics coordination. To address this research gap, we introduced the concept of postponement as a specific logistics strategy considered incompatible with PMO.

One of the most important principles controlling logistics activities within a firm is postponement of the timing of decision-making about what and how much to produce (Alderson, 1957; Yang *et al.*, 2004a). Postponement is a logistics strategy in which firms delay decision-making on product design and/or production. To mitigate the effects of demand uncertainty, firms increasingly adopt postponement in which they delay design and production decisions for as long as possible (Prater *et al.*, 2001; Yang *et al.*, 2004a, 2004b). For example, Benetton tracked sales trends in stores in real time and developed a production system that enabled quick responses to actual demand (Bowersox *et al.*, 1999). Zara has also reduced the lead time for product development and production, aimed at reducing obsolescence costs (Chaudhry and Hodge, 2012; Yang *et al.*, 2007). Similarly, firms in the electronics industry, such as Hewlett-Packard and Dell, have attempted to reduce the level of dead stock by postponing product specification decisions and production (Bowersox *et al.*, 1999; Feitzinger and Lee, 1997).

Yet, little is known about what would happen if firms pursued PMO and a postponement strategy simultaneously. Importantly, these two strategies have contradictory elements in terms of organizational learning. PMO involves an active search for new knowledge (latent needs), whereas postponement strategies are “reactive adaptation behaviors” (Yang *et al.*, 2004a, p. 1061), in which firms refer to and track current needs, using their existing product knowledge to fine-

tune and improve their products. Thus, the PMO and postponement approaches are considered incompatible in terms of organizational learning. In the next subsection, we hypothesize the impacts of the simultaneous pursuit of PMO and postponement on product performance, drawing on the exploration–exploitation literature.

2.2 Hypotheses development

2.2.1 Effects of proactive market orientation on product differentiation

The dependent variable in this study was “new product differentiation,” which refers to the degree to which a firm's new product possesses unique characteristics compared with the products of its competitors (Lisboa *et al.*, 2016; Sashi and Stern, 1995). The shortening of the product life cycle as a result of market maturity hastens the obsolescence of products, forcing firms to introduce new products continually. However, this trend has resulted in the flooding of markets with similar products, leading to the problem of commoditization (Azuma *et al.*, 2009; Yannopoulos *et al.*, 2012). To avoid price competition brought about by commoditization, firms must further differentiate their products.

MO studies have shown that PMO has a positive linear effect on radical and novel innovation (Cai *et al.*, 2015; Gotteland *et al.*, 2020; Lakshman *et al.*, 2017; Li *et al.*, 2008; Lin *et al.*, 2021; Wang and Liu, 2020; Zhang and Duan, 2010). These studies found that PMO is a learning behavior involving the search for new knowledge. The more firms engage in this behavior, the more radical and novel are the innovations produced or the greater the possible degree of differentiation (Iyer *et al.*, 2019; Shashishekar *et al.*, 2022).

Because a search for new knowledge is necessary to achieve product differentiation (Im and Workman, 2004; Iyer *et al.*, 2019; Lichtenthaler, 2016), PMO should have a positive impact on product differentiation. Therefore, we proposed the following hypothesis:

H1. PMO is positively correlated with new product differentiation.

2.2.2 The moderating effect of postponement

There are very few studies on the consistency and integration of logistics and marketing approaches, including MO (Ellinger, 2000; Jüttner *et al.*, 2007; Mentzer and Gundlach, 2010). One reason may be the lack of a common framework for discussing MO as organizational culture and logistics as operations. Clarifying the configuration of organizational culture and postponement is even viewed as a future challenge in logistics research (Yang *et al.*, 2004a). We, therefore, drew on the exploration–exploitation literature to develop a theoretical framework for assessing the (in)consistency of PMO and postponement.

The exploration–exploitation model applies the assumption of human bounded rationality (March, 1991) to theorize organizational learning. “Exploration” here refers to the search for and experimentation with new knowledge (technology, know-how and market opportunities), while “exploitation” refers to the elaboration and refinement of existing knowledge (March, 1991). The key to organizational survival lies in finding a balance between exploration and exploitation.

Organizations engaged solely in exploration may discover superior alternatives, but because they do not pursue such opportunities in depth, they cannot recoup their exploration costs. An organization that is solely engaged in exploitation also overlooks revenue and growth opportunities that transcend existing knowledge, thus risking stagnation. Therefore, balancing exploration and exploitation is a fundamental requirement for environmental adaptation.

Maintaining a balance between exploration and exploitation is, however, challenging in that both approaches compete for the organization's finite resources and are supported via different routines (Gupta *et al.*, 2006; He and Wong, 2004; Stettner and Lavie, 2014). Several studies have found that specializing in either exploration or exploitation rather than pursuing them simultaneously enables retention of focus and results in higher performance (Atuahene-Gima, 2005; Thornhill and White, 2007; Yannopoulos *et al.*, 2012; Wang *et al.*, 2020; Wei *et al.*, 2014). Although the question of whether firms should balance exploration and exploitation or specialize in one or the other remains unresolved, we posited that because of limited organizational resources, firms should specialize in one or the other to clarify their strategic focus rather than pursuing them simultaneously.

When firms that have already established PMO postpone design and production simultaneously, the degree of differentiation of new products is reduced. Firms that adopt postponement refine their design and production processes in response to ongoing customer feedback and changing preferences relating to sales volumes and trends (Aftab *et al.*, 2017; Chaudhry and Hodge, 2012; Yang *et al.*, 2004a). Thus, postponement adopted in response to current and expressed needs is regarded as a refinement of the design and production process aimed at reducing the likelihood of errors in decision-making. It has therefore been proposed that a postponement strategy is a type of exploitation (Cohen and Levinthal, 1990; Levinthal and March, 1993; March, 1991).

Conversely, PMO corresponds to exploration or the search for new knowledge (Atuahene-Gima *et al.*, 2005; Tsai *et al.*, 2008). Therefore, when an organization in which PMO is prevalent postpones design and production, it is simultaneously engaging in both exploration and exploitation. As already mentioned, it is difficult to balance both approaches because exploration and exploitation compete for the firm's finite resources and are supported by different mindsets and routines (Gupta *et al.*, 2006; He and Wong, 2004; Stettner and Lavie, 2014; Yang *et al.*, 2020). Furthermore, the outcomes of exploration are less certain and temporally more remote, whereas the outcomes of exploitation are more certain and immediate (March, 1991). Thus, simultaneous achievement of goals that differ greatly for the dimensions of certainty and timeliness is challenging.

In summary, PMO and postponement have contradictory elements. Pursuing both strategies simultaneously involve tracking expressed needs and uncovering latent needs that extend beyond current market trends. Firms that adopt this dual approach are, in effect, pursuing two completely different missions. Moreover, the time horizons of the missions differ. Whereas exploration of potential needs has a longer time horizon and can therefore be performed slowly, postponement has a more short-term orientation and requires quick responses

to immediate needs (Azuma *et al.*, 2009). Thus, if organizations with a PMO simultaneously engage in postponement, their goals and focus will become unclear and their attempts to differentiate their products by meeting latent needs will likely end in failure. Therefore, the following hypothesis was proposed:

- H2. The positive relationship between PMO and new product differentiation is negatively moderated by a postponement strategy.

3. Method

3.1 Sample

We tested our hypotheses in the context of the Japanese apparel industry, in which product differentiation and logistics efficiency are important issues given rapidly changing trends (Aftab *et al.*, 2017; Chaudhry and Hodge, 2012; Ye and Lau, 2018). We collected data from Japanese apparel companies, especially apparel wholesalers. In the Japanese apparel industry, large wholesalers have vertically internalized the design function, standing between sewing companies and retailers and serving as the command center for development, production and marketing (Urakami *et al.*, 2009; Urakami and Wu, 2017). These wholesalers postpone design and production in the same way as global apparel manufacturers do (Fernie, 2009; Fernie and Azuma, 2004; Minami *et al.*, 2012). Hence, Japanese apparel wholesalers provide an ideal context for investigating the impact of PMO and postponement on product differentiation.

We requested the Credit Exchange Agency to extract data from the National Textile Company Directory, which is not publicly available and developed a data set for our analysis. Next, we searched the data set, which contained data on textile-related companies throughout Japan, and identified apparel companies with annual sales revenue greater than approximately US\$5M. Finally, we reviewed the companies' websites and selected companies that met the following criteria: they were engaged in the apparel wholesale business, they were not OEM or ODM companies specializing in the design and production of products that are rebranded and marketed by other apparel companies and they were still operating at the time of the survey. Using this sampling procedure, we selected 983 apparel companies.

Various brands were identified using the following procedure. First, for companies whose brand names were included in the National Textile Company Directory database, up to three brands or licensed brands of each company were listed in order of their appearance in the database. Second, in cases where the companies' brand names were not included in the database, we selected three brands from each company's website in order of their listing. Finally, for companies whose brand names were not included in the database or on the company's website, we sent out a questionnaire to company presidents to be forwarded to the managers in charge of their main brand.

We conducted a mail-based survey of 1,448 individual brand managers. A questionnaire was sent to each brand manager along with a business reply envelope to return the completed questionnaire. A total of 194 questionnaires were returned;

after excluding questionnaires with missing values, 187 questionnaires were available for analysis (a response rate of 12.9%).

We assessed the potential nonresponse bias by comparing early versus late respondents (Armstrong and Overton, 1977). The nonsignificant *t*-test comparisons between early (returned by the fixed deadline) and late (returned after the deadline) respondents for all constructs indicated no serious threat from the nonresponse bias. A key informant check was conducted using responses measured on a seven-point Likert-type scale to the following item: "I am familiar with the business of the brand I am in charge of." The mean response was 6.37 (SD = 0.92); thus, we considered that key informants were well-qualified.

3.2 Measurement

We used measurement scales in English to ensure conceptual equivalence. We first translated the English version of the questionnaire into Japanese, then retranslated it back into English, and finally refined some of the wording in the Japanese version. To confirm the validity and clarity of the items, we interviewed experts in the apparel industry and made minor changes to the wording. Constructs and items included in the questionnaire are as follows:

1 New product differentiation.

Modification of Im and Workman (2004) and Ramaswami et al. (2009): 1 = *Strongly disagree* and 7 = *strongly agree*.

- "Compared with our competitors, we are able to develop innovative new products that are different from competing brands."
- "Compared with our competitors, we are able to develop new products that are differentiated from competing brands."
- "Compared with our competitors, we are able to develop new products that are different from the trends in the industry."

2 PMO.

Modification of Narver et al. (2004): 1 = *strongly disagree* and 7 = *strongly agree*.

- "We strive to discover new needs that consumers themselves are not aware of."
- "We search for opportunities to address needs that consumers cannot articulate or communicate well."
- "We carefully observe the behavior of lead users to foresee future consumer needs."
- "We try to draw insights about future consumer needs from important market trends."

3 Postponement of design and production.

Modification of Nair (2005): 1 = *Yes*, 0 = *No*.

- "During the season, we request additional orders and production increases from manufacturers while monitoring sales."
- "We do additional product planning during the season for the season in question."

4 Sales.

- Brand sales (log).

5 Market uncertainty.

Gu et al. (2010)

- "In our business, customers' product preferences change quite a bit over time."
- "The demand in our industry has been very unstable."
- "Our customers tend to constantly look for new products."

6 Competitive strategy.

Frambach et al. (2003)

- "Research and development of new products are very important within our firm."
- "Our organization emphasizes cost reduction in all its business activities."
- "Our firm targets a specific, limited part of the market with our products."

7 Degree of retail integration (Original).

Please choose the most appropriate channel for you to sell your products (one item).

- "We sell all our products through outside retailers."
- "We use both our own retail stores (including e-commerce sites) and outside retailers."
- "All products are sold through our own retail stores (including e-commerce sites)."

Three dummy variables were created, with a value of 1 assigned to the sentence chosen by the respondent and 0 to the sentence not chosen.

8 Degree of production integration (Original).

Please choose the most appropriate production systems for you to produce your products (one item).

- "We outsource the production of all our products to external companies (OEM/ODM, sewing manufacturers)."
- "We use both our own factories and outside companies (OEM/ODM, sewing manufacturers)."
- "We produce all of our products in our own factories."

Three dummy variables were created, with a value of 1 assigned to the sentence chosen by the respondent and 0 to the sentence not chosen.

9 Target segment (Dummy).

- "Who are your primary target customers?"

Children (up to 12 years old, male and female)/Teenagers (13–19 years old, male and female)/Young adult women (20–34 years old)/Middle-aged women (35–49 years old)/Elderly women (50 years old or older)/Young adult men (20–34 years old)/Middle-aged men (35–49 years old)/Elderly men (50 years old or older).

10 Product category (Dummy)

- "What is the main category of your products?"

Babies' and children's clothing/Women's clothing/Men's clothing/Trendy-casual clothing/Basic-casual clothing/Jeans/Other.

3.2.1 Dependent variable: new product differentiation

Given the context of the study, firm performance was measured by the degree of success regarding new product differentiation. In the apparel industry, it is challenging for firms to achieve a high level of performance because a wide range of new products is launched every season (Aftab et al., 2017; Chaudhry and Hodge, 2012). Im and Workman (2004) and Ramaswami et al. (2009) noted that uniqueness and

novelty are the foundations of new product differentiation. Therefore, we modified the measurement scales for novelty and uniqueness used in Im and Workman (2004) and Ramaswami *et al.* (2009) and applied these scales to measure new product differentiation. The modification of the measurement scales enabled a suitable fit with the Japanese apparel industry. The construct was measured using a seven-point Likert-type scale.

3.2.2 Independent variable: proactive market orientation

The independent variable was PMO, as proposed by Narver *et al.* (2004). Additionally, we selected four items used in previous studies that were appropriate for the Japanese apparel industry.

3.2.3 Moderator and controls

Postponement of design and production (POS). The postponement strategy was measured using two items proposed by Nair (2005) and modified to fit the Japanese apparel industry: additional production and design throughout the season. Additional production refers to requests to manufacturers to place additional orders for extra lot production within a season while monitoring sales during that season. Additional design refers to designing new products in response to sales and market trends during the current season. The two items were measured using binary responses: “yes” or “no.” If the answer was “yes,” the company was planning to produce additional products while tracking demand during the season, in which case it was deemed to have adopted a postponement strategy. If the answer was “no,” the company was deemed to be speculating, having decided on product specifications/production volumes prior to the season’s commencement. Hereafter, the postponement of design and production was represented by POS.

Controls. Firm size and market uncertainty are the control variables used in most MO studies (Atuahene-Gima *et al.*, 2005; Herhausen, 2016; Wang *et al.*, 2020). We used brand sales as a proxy for brand business size. Market uncertainty was measured using the three items proposed by Gu *et al.* (2010). Additionally, we controlled for three generic strategies: pursuit of differentiation, cost leadership and focusing (Frambach *et al.*, 2003; Porter, 1980), the degree of production integration, the degree of retail integration, target segments and product categories.

Because the data for each brand was obtained from a single respondent, common method variance (CMV) was potentially a critical issue. To check for CMV, we first conducted Harman’s one-factor test on the multi-item measures, differentiation, PMO, POS and market uncertainty. Following

exploratory factor analysis, we extracted two factors whose eigenvalues were above one. We obtained a proportion of variance of 27.83% explained by the first factor, which was well below the 50% threshold (Podsakoff *et al.*, 2003). The one-factor confirmatory factor analysis yielded a value for $\chi^2_{(d.f.)} = 488.84_{(54)}$, and the fit was considerably worse than that for the measurement model ($\Delta\chi^2_{(\Delta d.f.)} = 328.96_{(6)}$, $p < 0.001$). For the multi-item measures, we performed confirmatory factor analysis with method factor. The results showed that all item loadings on the common method factor were insignificant ($p > 0.05$). Therefore, we concluded that CMV was not a significant problem.

4. Empirical analysis

First, we assessed the construct validity of the measures using multiple items following Fornell and Larcker (1981) and Hair *et al.* (2018). Table 2 shows the descriptive statistics for the constructs measured in the multi-items. The Cronbach’s α coefficients for all the constructs were mostly above 0.7 (0.69–0.89). The composite reliability (CR) values for the constructs were also above 0.7 in most cases (0.69–0.90), which met the recommendations of Hair *et al.* (2018) and indicated sufficient reliability. We also assessed convergent and discriminant validity. The average variance extracted (AVE) values for all constructs exceeded 0.50, except for market uncertainty. Although the AVE value for market uncertainty was 0.48, we concluded that the convergent validity of the construct was adequate if the CR was at a satisfactory level (Malhotra and Dash, 2011). Because the CR value for market uncertainty was high at 0.72, we deemed that convergent validity was generally maintained. The square root values of all AVEs exceeded the correlation coefficients between all constructs, which satisfied the requirements for discriminant validity.

Table 3 shows the results of the ordinary least squares (OLS) estimations. Model 1 is a baseline model that only contains control variables. Model 2 entails addition of both PMO and POS to Model 1. POS was the average of two binary scales (implementation/nonimplementation of design postponement and implementation/nonimplementation of production postponement) and was represented by an intercept dummy, where POS = 0 meant that neither the design nor production was postponed and POS = 1 meant that both design and production were postponed. In this model, PMO was significantly positively correlated with product differentiation ($\beta_{10} = 0.30$, $p < 0.001$). The main effect of POS was nonsignificant, and the level of product

Table 2 Descriptive statistics for the constructs measured in the multi-items

	M	SD	α	CR	AVE	1	2	3	4
1. New product differentiation	4.88	1.20	0.89	0.90	0.75	(0.87)			
2. PMO	4.95	1.08	0.81	0.77	0.52	0.49	(0.72)		
3. Postponement	0.73	0.38	0.69	0.69	0.52	0.02	0.16	(0.72)	
4. Market uncertainty	4.70	1.19	0.70	0.72	0.48	0.04	0.18	0.18	(0.69)
Skewness						−0.45	−0.40	−1.00	−0.37
Kurtosis						0.29	−0.02	−0.57	−0.39

Notes: The square root of AVE for each factor is depicted on the diagonal. The off-diagonal elements are the factor correlations

Table 3 Results

		Model 1		Model 2		Model 3	
β_1 :	Brand sales (log)	−0.03	(0.06)	−0.01	(0.06)	−0.00	(0.06)
β_2 :	Market uncertainty	−0.01	(0.07)	−0.05	(0.07)	−0.04	(0.07)
β_3 :	Production partial integration ^a	0.03	(0.18)	−0.08	(0.18)	−0.10	(0.17)
β_4 :	Production full integration ^a	−0.39	(0.30)	−0.34	(0.29)	−0.34	(0.28)
β_5 :	Retail partial integration ^b	−0.01	(0.20)	−0.07	(0.19)	−0.13	(0.19)
β_6 :	Retail full integration ^b	0.13	(0.25)	0.02	(0.24)	−0.03	(0.24)
β_7 :	Pursuit of differentiation	0.52***	(0.07)	0.42***	(0.07)	0.43***	(0.07)
β_8 :	Pursuit of cost leadership	−0.01	(0.06)	−0.01	(0.06)	0.00	(0.06)
β_9 :	Pursuit of focusing	0.07	(0.05)	0.07	(0.05)	0.08	(0.05)
β_{10} :	PMO			0.30***	(0.08)		
β_{11} :	PMO _C					0.70***	(0.16)
β_{12} :	POS			−0.29	(0.22)	−0.33	(0.30)
β_{13} :	PMO _C × POS					−0.54**	(0.18)
β_0 :	Constant	1.74*	(0.71)	1.21	(0.69)	2.51***	(0.75)
Target segment dummy		Included		Included		Included	
Product category dummy		Included		Included		Included	
<i>F</i>		4.10***		4.78***		5.14***	
<i>R</i> ²		0.36		0.42		0.45	
Adjusted <i>R</i> ²		0.27		0.33		0.36	
ΔR^2 over Model 1				0.06***		0.09***	
ΔR^2 over Model 2						0.03**	
VIF (β_0 – β_{13})		<1.83		<1.87		<5.68	

Notes: * $p < 0.05$, ** $p < 0.01$ and *** $p < .001$. Standard errors are shown in parentheses. a: baseline, with full outsourcing of production; b: baseline, with full outsourcing of retailing; PMO_C: mean-centered PMO

differentiation did not change with either the implementation or nonimplementation of postponement.

Model 3 included PMO_C (mean-centered PMO), POS and their interaction. In Model 3, PMO_C was significantly positively correlated with product differentiation ($\beta_{11} = 0.70$, $p < 0.001$). In addition to the estimations shown in Table 3, the squared term of the PMO was introduced and analyzed but was not significant in any of the models. Therefore, *H1* was supported.

In addition, in Model 3, the interaction between PMO_C and POS was negatively correlated with product differentiation ($\beta_{13} = -0.54$, $p < 0.01$). As mentioned earlier, POS is a binary variable that may or may not be postponed. Hence, a negative interaction between PMO_C and POS implied that the effect of PMO_C on product differentiation varied depending on whether POS is 0 or 1.

Following Aiken and West (1991), the mathematical expression for Model 3 was:

$$Y = \beta_0 + \beta_{11}\text{PMO}_C + \beta_{12}\text{POS} + \beta_{13}\text{PMO}_C \times \text{POS} + \text{controls.} \quad (1)$$

If POS = 0, then:

$$Y = \beta_0 + \beta_{11}\text{PMO}_C + \text{controls,} \quad (2)$$

and if POS = 1, then:

$$Y = (\beta_0 + \beta_{12}) + (\beta_{11} + \beta_{13})\text{PMO}_C + \text{controls.} \quad (3)$$

The results for Model 3 showed that β_{13} in equation (3) was significantly negative. This means that when postponement

was implemented (POS = 1), the positive correlation between PMO and product differentiation was significantly weakened compared with a situation in which postponement was not implemented (POS = 0). Therefore, *H2* was supported.

To check the robustness of the results, we performed two additional analyses. First, in the Shapiro–Wilk test, the null hypothesis of normality for several variables (new product differentiation, pursuit of differentiation and pursuit of focusing) were rejected. To attenuate the biased distribution of the variables, we log-transformed these variables and repeated the OLS estimation, as in Model 3. The coefficient of PMO_C with log-transformed product differentiation was positive ($\beta = 0.16$, $p < 0.001$), whereas the coefficient of interaction between PMO_C and POS was negative ($\beta = -0.12$, $p < 0.05$). Thus the results hardly differed from those for Model 3.

Second, although heteroskedasticity was not observed in our data (Breusch–Pagan/Cook–Weisberg test statistic: $\chi^2_{(d.f.)} = 0.02_{(1)}$, $p > 0.10$), we calculated robust standard errors and repeated hypothesis testing. The test results for each coefficient of PMO_C and the interaction between PMO_C and POS remained identical to the results in Model 3.

5. Discussion

Marketing scholars have paid scant attention to the impacts of PMO and logistics configuration on product performance, even though both are strongly linked to product development. To fill this research gap, we introduced the concept of postponement as a basic logistics strategy, presently deployed by many firms, and examined the interaction effect of PMO and postponement on new product differentiation.

Previous studies have examined the correlations of PMO and performance, focusing mainly on high-tech industries (Cai *et al.*, 2015; Lamore *et al.*, 2013; Li *et al.*, 2008; Ozdemir *et al.*, 2017; Tinoco *et al.*, 2020; Yannopoulos *et al.*, 2012). However, our results show that PMO is one of the leading drivers of product differentiation, even in the low-tech apparel industry. This finding suggests that PMO is not limited to knowledge-intensive industries, and its value is not specific to particular industries.

Furthermore, we found that the positive relationship between PMO and new product differentiation is negatively moderated by a postponement strategy. This finding suggests that when design and production are postponed, it becomes difficult to achieve product differentiation even with a strengthened PMO. A possible theoretical explanation for this result is that PMO and postponement correspond, respectively, to exploration and exploitation. These two types of learning behaviors differ greatly in terms of allocated resources, learning focus and time frames within an organization. Therefore, simultaneous pursuit of PMO and postponement leads to a lack of clarity in goals and focus, with attempts at product differentiation consequently being more likely to fail.

5.1 Theoretical implications

This study advances the marketing literature in several ways. First, it contributes to marketing theory by examining the impact of PMO and logistics configuration on product performance. Despite arguing that the effectiveness of PMO is moderated by a variety of factors, researchers have rarely focused on the moderating effects of logistics, with Lim *et al.* (2017) being an exception. Several studies have explored functional conflict, lack of communication and integration between marketing and logistics departments (Ellinger, 2000; Jüttner *et al.*, 2007; Lynch and Whicker, 2008; Min and Mentzer, 2000; Sezen, 2005). However, these studies disregarded the consequences of combining specific types of MO with specific logistics strategies. To fill this gap, we went beyond the issue of mere cooperation or functional integration of marketing and logistics and focused on the compatibility of PMO and postponement, finding that their simultaneous pursuit does not produce a positive synthesis.

Second, we showed that the compatibility of PMO and a postponement strategy can be explained by exploration and exploitation, which are integral components of organizational learning. Previous studies have discussed MO and logistics separately, perhaps because they lacked a common framework for discussing organizational culture (MO) and operations (logistics). We overcame this theoretical limitation by adopting an exploration–exploitation typology. An important implication of our findings is that attempts to combine exploration and exploitation yield poor product performance. This finding supports the claim of previous studies that a singular focus on exploration or exploitation rather than their simultaneous pursuit enables firms to retain their strategic focus, resulting in better performance (Atuahene-Gima, 2005; Thornhill and White, 2007; Yannopoulos *et al.*, 2012; Wang *et al.*, 2020; Wei *et al.*, 2014). Although balancing exploration and exploitation is often interpreted to mean that firms should pursue both simultaneously to achieve high performance, this approach

entails inherent limitations and difficulties (Atuahene-Gima, 2005; Greve, 2007). Future studies should consider not only how firms can combine exploration and exploitation approaches but also which strategy, specialization or ambidexterity, is more effective and under what conditions.

Third, this study draws attention to the recent finding in the logistics literature that a postponement strategy is effective in uncertain market environments. Prevailing market circumstances have evidently strengthened the rationale for postponement, given that firms have become increasingly unable to ignore the costs of unsold inventory and lost sales caused by demand uncertainty. Moreover, innovations in information and production systems have made it possible to operate postponement systems more efficiently (Aviv and Federgruen, 2001; Bowersox *et al.*, 1999; Kou *et al.*, 2018; Takashima, 2010; Yang *et al.*, 2004b). However, our findings indicate that postponement dilutes firms' efforts at product differentiation. As Jüttner *et al.* (2007) noted, logistics (and supply chain) efficiency alone will not increase customer value or satisfaction. Therefore, logistics research requires theory building that encompasses the effectiveness of demand response (creation) as well as procurement, production and distribution efficiency.

5.2 Managerial implications

Our findings suggest that managers should be sensitive to configurations of PMO and logistics. In a highly competitive and uncertain market environment, PMO and postponement, considered respectively from product development and logistics perspectives, are rational approaches. This is because proactive adaptation to customer demands assumes importance in an uncertain market environment (Blocker *et al.*, 2011; Lin *et al.*, 2021; Tsai *et al.*, 2008; Zhang and Duan, 2010). At the same time, postponed development and production systems are needed to reduce inventory risks (Jüttner *et al.*, 2007; Prater *et al.*, 2001; Yang *et al.*, 2004a, 2004b). However, product development based on PMO and combined with a postponement strategy will not promote organizational synthesis.

Our findings suggest that postponement prompts firms' efforts to respond quickly to existing needs, thus becoming short-term oriented and inhibiting the development of new products that would meet latent needs. Such a strategy has practical implications for linking product development and logistics: firms attempting to satisfy consumers' latent needs need to restrict the degree of postponement. In short, firms should decide which needs to focus on. If they attend to current trends, which are based on expressed needs, they must respond faster than their competitors. Alternatively, if they consider that latent needs are important, they should pursue PMO-based product differentiation at the expense of efficiency. The competitive advantage of fast fashion companies (e.g. Zara and Benetton) is supported by a sophisticated, postponed production and development system (Bowersox *et al.*, 1999; Chaudhry and Hodge, 2012; Yang *et al.*, 2007). However, a firm seeking to develop novel products or a differentiated brand identity, such as luxury brands (Kapferer and Bastien, 2012), is unlikely to succeed if it follows these firms and introduces a postponed system.

Clearly, firms produce a variety of products, and each can be assigned a different role: one product can be designed to satisfy

latent needs, while another can be designed to satisfy expressed needs. If firms are able to build such a portfolio, they will operate ambidextrously (Benner and Tushman, 2003). However, when building a product portfolio, they should deploy separate teams to develop products with different objectives. If one team simultaneously pursues incremental product improvement and radical new product development, the organization's performance will deteriorate, given increased costs (Atuahene-Gima *et al.*, 2005).

Previous studies have recommended dividing teams or separating organizations (Atuahene-Gima, 2005; Christensen, 1997). However, given the findings of this study, simply separating teams may not be sufficient. Even if a team is divided into an incremental product improvement team and a radical new product development team, the latter is likely to struggle if the design and production system is based on postponement. Therefore, the successful development of innovative new products requires delegating the development function to a separate team and shifting the design and production system for that team to a speculative arrangement.

5.3 Limitations and future research

This study had three limitations that should be addressed in future research. First, the measurement of postponement needs to be improved. We measured design and production using binary variables that indicated whether postponement had been implemented. The Japanese apparel industry is subject to relatively distinct seasons that determine what kinds of products will be sold. Therefore, critical measurement errors are not an issue, even though we measured postponement using binary variables focused on whether design and/or production occurred before or after the season commenced. However, different measurement scales are needed for industries that are not subject to seasonal changes. For example, by using a measurement scale, such as a make-to-order ratio or customization ratio, we can develop a generic measurement scale applicable to various industries, which would allow the generalization of our findings.

Second, the effects of RMO need to be analyzed. This study focused on PMO as an antecedent condition for the creation of innovative new products. However, we did not examine the effect of RMO. Because RMO is deemed equivalent to exploitation in organizational learning theory, it is considered compatible with a postponement strategy. Therefore, it is necessary to analyze whether this reasoning is correct.

Finally, as mentioned in subsection 5.2, it is expected that for organizations to achieve ambidexterity, they must divide their product portfolio into exploration and exploitation products and link their design and production systems with this approach. By analyzing this linkage between product portfolios and appropriate design and production systems, we can obtain further insights into organizational ambidexterity.

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