



## Improving firm performance through NPD: The role of market orientation, NPD orientation and the NPD process

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### ABSTRACT

Achieving sustained business performance is a challenge for many firms. Nowhere is this more obvious than in the food and packaged goods domain where manufacturers are significantly affected by globally aggressive competitors and retailers. Drawing on the resource-based view of the firm this study of 173 food manufacturers finds that the NPD process is a capability enabling the translation of a firm's market orientation and its NPD orientation, both resources, into superior NPD program success, thereby enhancing overall firm performance. The results help clarify the somewhat ambiguous relationship between market orientation, product innovation and firm performance and demonstrate that firms wishing to leverage product innovation must have the cultural and structural foundations of both a market orientation and NPD orientation. Importantly, they must implement a well-executed NPD process in order to translate these broader firm resources into performance outcomes.

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### 1. Introduction

Achieving superior market place performance in an increasingly competitive business environment requires firms to be committed to new product development and to use firm resources and capabilities to ensure that the on-going program of new product development is successful (Hsieh et al., 2008; Kleinschmidt et al., 2007; Olavarrieta and Friedman, 2007; Paladino, 2007). Firm resources such as a market-oriented culture, formal design of the NPD process, resource commitment, planning processes and management commitment to NPD have been linked with success (Cooper and Kleinschmidt, 1995). Kleinschmidt et al. (2007) argue that the proficient execution of the NPD process is the mechanism or capability through which a firm's NPD-related resources are translated into performance outcomes and suggest that the resource-based view of the firm might be a better lens through which to understand the nature of drivers of new product success in globally competitive environments.

Several articles have offered insights into the role of product development in the light of the resource-based view (RBV) of the firm (e.g. de Brentani et al., 2010; Ngo and O'Cass, 2008; Madhavaram and Hunt, 2008; Olavarrieta and Friedman, 2007). It is only recently

however that research has sought to combine market orientation and resource-based views in the context of product development success (Kleinschmidt et al., 2007; Paladino, 2007, 2008). According to Paladino (2007, 2008) the RBV and market orientation have both been used to explain the attainment of superior performance. RBV emphasises the importance of exploiting internal firm resources to achieve advantage, whereas market orientation emphasises the importance of gathering and employing customer and competitor insights to help shape marketing actions. As Paladino (2008) further argues, the ultimate objective of a RBV is to understand how firms create persistent above-normal returns and superior value by developing and deploying unique and costly to imitate resource bundles. The ultimate objective of the market-oriented firm is to create superior value for the customer using its resources and capabilities (Narver and Slater, 1990; Paladino, 2008).

Although much research has focused on NPD success, particularly at the project level (e.g. Hsieh et al., 2008), rather less is focused on the program level and its subsequent influence on firm performance. A program level focus reflects an understanding that program level success may be somewhat different than at the project level and that some firm influences on NPD e.g. firm culture, might not be apparent at the project level and yet may be important to success (Atuahene-Gima et al., 2005; Cooper and Kleinschmidt, 1995; Kleinschmidt et al., 2007; Olavarrieta and Friedman, 2007; Paladino, 2007).

This research subsequently presents a model of the relationship between the firm's resources of market orientation, and NPD

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orientation, and the NPD process capability that promotes both NPD program success and overall firm performance. In doing so the research builds on the work of Langerak et al. (2007), Kleinschmidt et al. (2007) and Paladino (2007, 2008) to further understand the impact of organisational resources and their translation into performance outcomes through organisational capabilities.

The context for this research is the Australian food manufacturing industry. Food manufacturers are facing significant competitive challenges that may be alleviated, at least partly, through improved performance of their NPD programs. Manufacturers have found themselves sandwiched between two dominant grocery retail chains, a highly consolidated industrial food service industry, and increasing levels of imported foods and food brands. The food retail situation is of particular interest in that two chains account for around 71% of the nation's AUD\$83bn grocery trade (Burgio-Ficca, 2011). The implementation of private label programs by both major chains places even greater pressure on manufacturers to innovate their products and it has been suggested that both chains are targeting 20–30% or more of sales in particular categories.

## 2. The resource-based view and NPD

The resource-based view of the firm provides an effective lens through which to examine NPD success at the program level (de Brentani et al., 2010; Kleinschmidt et al., 2007). Resources and capabilities are central constructs of the resource-based view of the firm and are considered essential in gaining a sustainable advantage over other firms (Barney, 1991; Peteraf, 1993; Slater and Narver, 1994; Wernerfelt, 1984). Resources have been classified as tangible, e.g. financial and physical assets, plant and equipment, and intangible e.g. human capital, know-how (Hunt and Morgan, 1995). According to Ngo and O'Cass (2008) the tangible–intangible resource dichotomy is analogous to the operand–operant resource dichotomy suggested by Vargo and Lusch (2004) and more recently, Madhavaram and Hunt (2008). Operand resources refer to resources on which an operation is performed to produce an effect e.g. land, plant, or raw materials. Operant resources refer to those that operate on operand resources to produce effects, for example, firm processes and competences (Ngo and O'Cass, 2008). In the context of this study two variables can be considered operant resources; market orientation (Hunt and Morgan, 1995; Olavarrieta and Friedman, 2007) and NPD orientation.

A meta-analysis by Henard and Szymanski (2001) identified 24 antecedents to new product performance. These were categorised into four areas; product characteristics, firm strategy characteristics, firm process characteristics and marketplace characteristics. Relevant at the program level 'firm strategy characteristics' consists of those drivers that are associated with the firm and management of the NPD program within the firm. In this study the category is considered an operant resource and is labelled *NPD orientation*, albeit with slightly different allocations of the drivers which is not inconsistent with the literature (e.g. Kleinschmidt et al., 2007).

Increasingly the RBV literature is establishing the importance of firm capabilities in the resource – performance relationship (Newbert, 2007). Capabilities are processes, or embedded routines that deploy or transform the firm's resources into desired outcomes (Morgan et al., 2009) As Ngo and O'Cass (2008) suggest, firms will (or should) have as many capabilities as are necessary to transform their resources (operand and operant) into valuable outputs. An essential characteristic of a capability is that a firm performs the process better than its competitors. In this study, drawing from Henard and Szymanski's (2001) 'firm process characteristics' category, *NPD process* is the capability proposed to transform the resources of market orientation and NPD orientation into NPD program success and subsequently firm performance.

In summary, this research assesses firm performance in terms of four main components: (1) a firm's market orientation which is seen as a resource that provides a cultural foundation for market focused management of NPD; (2) a firm's NPD orientation which is seen as a resource that underpins their overall approach to NPD; (3) a firm's NPD process and its execution which is the capability that captures the comprehensiveness and thoroughness of the stages of the NPD process; and (4) the contribution of NPD program success to overall firm performance. As with Kleinschmidt et al. (2007) these are modelled in antecedent terms where the impact of resources on performance is mediated by capabilities (Fig. 1).

## 3. Hypotheses

### 3.1. Market orientation

An extensive market orientation literature has been produced in the last 20 years. Several meta-analyses have been conducted that

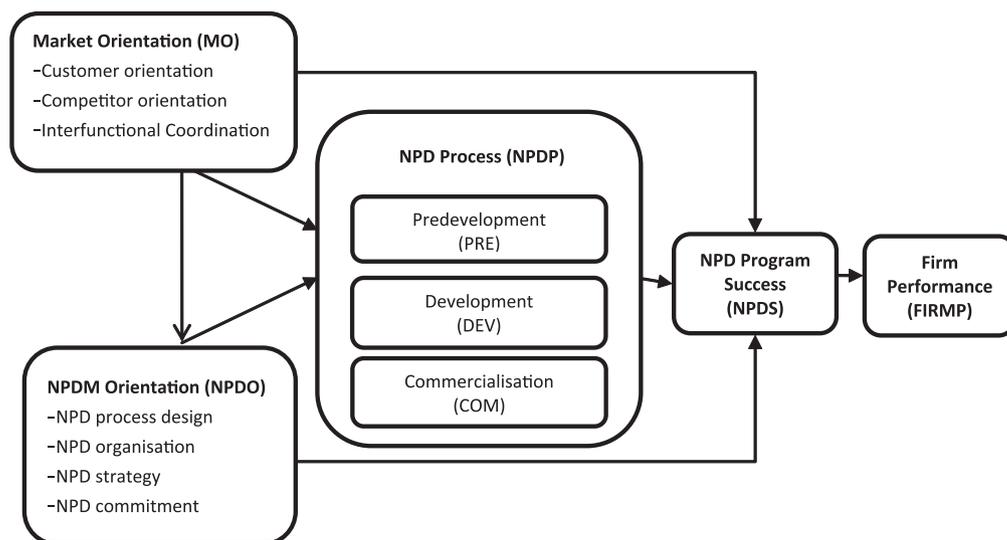


Fig. 1. Conceptual framework.

confirm the market orientation performance link, as well as both antecedent and consequent relationships and moderators (Ellis, 2006; Kirca et al., 2005; Lafferty and Hult, 2001). Despite this there are still some areas that remain unclear.

More recently the literature examining market orientation from an RBV perspective has argued that market orientation as a culture is a resource within the firm that contributes to performance (Madhavaram and Hunt, 2008). The rationale for market orientation being positively related to new product performance is embedded in the belief that a market-oriented culture embodies organizational values and beliefs that guide activities that lead to superior organizational performance. Consistent with the RBV framework we have adopted the Narver and Slater (1990) conceptualisation of market orientation. Thus:

**H1.** Market orientation has a direct and positive influence on the success of the firm's NPD program.

From the early days of market orientation research the relationship between market orientation and product innovation has been questioned (Baker and Sinkula, 2007). Langerak et al. (2007) note that whilst there is a connection between market orientation and new product success the means through which this occurs is not clear. Lee et al. (2006) identified that market orientation leads firms to enhance their strategy development process (including NPD strategy). This is supported by Mavondo et al. (2005) who found that market orientation is positively related to the development of systems and structures that support product innovation. Thus:

**H2.** Market orientation has a direct and positive influence on the on the firm's NPD orientation.

As argued by Morgan et al. (2009) the mechanism by which market orientation is deployed via capabilities is important in understanding how it contributes to performance. Recent work in the area of market orientation and NPD has identified the importance of certain capabilities as mediating the market orientation – performance relationship (Baker and Sinkula, 2005). In this research we focus specifically on NPD process and its execution as this capability is critical to NPD success (Barczak et al., 2009; Langerak et al., 2007). It is argued that the customer and competitor focus inherent in a market-oriented firm will promote the explicit inclusion of market based exploration, analysis and testing activities in their NPD process. Thus:

**H3.** Market orientation has a positive influence on the execution of the firm's NPD process consisting of (a) predevelopment, (b) technical development, and (c) commercialisation.

### 3.2. New product development orientation

Extant literature suggests that overall program-level new product development performance is driven by a number of organisational factors or resources, including (1) NPD process design incorporating the formal process for NPD that has been developed and practiced over time and that determines the NPD routines used for developing new products (Cooper et al., 2003; Menon et al., 2002); (2) NPD organisation, the deployment of cross functional teams, and accountabilities by teams and individuals for NPD outcomes (Barczak et al., 2009; Reid and de Brentani, 2004); (3) NPD strategy, which incorporates strategic market arena focus, formalises the structures for implementation, and defines goals for the NPD program (Barczak et al., 2009; Cooper and Kleinschmidt, 1995); and (4) Management commitment, including senior management's attitude, involvement and resource commitment to the firm's NPD effort (Ruekert et al., 2002). Together these elements

represent a firm's investment in, and support of, an NPD program. A program that is resourced in this manner is more likely to succeed. Thus:

**H4.** NPD orientation has a direct and positive influence on NPD program success.

Recent discussions of the RBV posit that resources such as strategy, culture and process management are higher order or abstract in nature and are translated into performance outcomes through specific capabilities or 'building blocks' (Madhavaram and Hunt, 2008). Kleinschmidt et al. (2007) found that NPD-related firm resources were important for effective deployment of NPD process capabilities. These resources act as a catalyst for the development of a comprehensive, rigorous NPD process. Thus:

**H5.** NPD orientation has a positive influence on the execution of the firm's NPD process consisting of (a) predevelopment, (b) development, and (c) commercialisation.

### 3.3. NPD process

The influence of the NPD process and its execution is well established as a driver of performance (Barczak, 1995; Ernst, 2002; Hebard and Szymanski, 2001; Montoya-Weiss and Calantone, 1994). As identified in the literature review by Ernst (2002) a variety of labels and categories for the different phases of the NPD process has been used. Despite the differences a consistent theme emerges which groups the process into three phases or factors, including predevelopment, technical development, and launch preparation or commercialisation (Ernst, 2002; Langerak et al., 2007).

However much of this research has been done at the project level and less common is research at the program level that examines the relationships between individual elements of the NPD process and NPD program success (Atuahene-Gima, 1995; Kleinschmidt et al., 2007; Langerak et al., 2007; Reid and de Brentani, 2004). One exception is Barczak (1995), who in a study connecting NPD strategy, structure and processes at the program level, found that idea generation and screening (part of predevelopment) in particular were strongly related to performance. Given the extant literature that identifies the relationship between these factors and performance (Atuahene-Gima, 1995; Kleinschmidt et al., 2007; Langerak et al., 2007; Reid and de Brentani, 2004), and the suggestion that not all of these factors contribute equally to performance (see for example, Barczak, 1995; Troy et al., 2001). Thus:

**H6.** The execution of NPD process stages of (a) predevelopment, (b) development, and (c) commercialisation have a positive influence on the success of the firm's NPD program.

As discussed earlier, how well a firm performs a process or routine relative to its competitors (capability) is a key determinant in the transformation of resources into superior outcomes. In this study the variable of interest is the formal, staged, NPD process the firm uses. Thus:

**H7.** NPD process and its execution totally mediate the relationship between (a) market orientation and NPD program success, and (b) NPD Orientation and NPD program success.

### 3.4. NPD program success and firm performance

A resource-based view of the firm would suggest that the results of a successful NPD program should be reflected in the ability of the firm to achieve competitive advantage and likely superior financial returns. A best practice report by Griffin and Page

(1997) suggested that firms realise around 49 per cent of their sales from new products launched over a 5 year period and that NPD performance accounted for around 25 per cent of variability in firm performance. Prior research has shown that new product performance, especially at the product level, is associated with organisational performance (Griffin and Page, 1996; Langerak et al., 2004, 2007). More recently, Paladino (2007) identified a relationship between resource orientation, new product success at the program level and firm performance. Consistent with such research it is argued that the outcomes of a firms NPD program, as a function of their resources and capabilities, will result in improved financial performance. Thus:

**H8.** NPD program success has a positive influence on overall firm performance.

## 4. Methodology

### 4.1. Questionnaire design and data collection

The data for this research were gathered using a structured self-administered questionnaire. The research focuses on the food manufacturing industry in order to minimise confounding effects of cross-industry analysis (Barczak, 1995). In total 898 questionnaire packages consisting of the questionnaire, a personally addressed cover letter and reply-paid envelope were successfully sent to managers with NPD responsibilities. This was followed by a single reminder letter posted 2 weeks after the initial mail-out. In total, 232 useable questionnaires were returned representing a response rate of 25.8%. Of the 232 respondents 173 indicated they undertook significant NPD activities. The suitability of respondents was assessed by a single item questioning their level of involvement with NPD in the firm or business unit (mean = 4.05/5). Non-response was assessed by comparing early responders with those received after the reminder letter. There were no significant differences detected ( $p < 0.05$ ).

### 4.2. Measures

All questions used five-point likert type scales and were derived from established measures. Market orientation (MO) was measured as a second order construct with three first order factors; customer orientation, competitor orientation, inter-functional cooperation (Narver and Slater, 1990). Although some of the recent market orientation–innovation literature has examined each of the three components separately (e.g. Augusto and Coelho, 2009; Lukas and Ferrell, 2000) it is treated in this analysis as a single variable (e.g. Langerak et al., 2007; Mavondo et al., 2005).

The measure for NPD orientation (NPDO) is based on Cooper and Kleinschmidt (1995) and Henard and Szymanski (2001) and

is modelled as a second order construct consisting of four first order factors; (1) NPD process design, incorporating the existence of a formal process for product innovation that determines the routines used for developing new products; (2) NPD organisation, incorporating the use of cross functional teams, and accountabilities by teams and individuals for NPD outcomes, (3) NPD strategy, which incorporates the determination of market/product arenas, defines goals for the NPD program and formalises the structures for implementation, and; (4) Management commitment, including senior management's attitude, involvement and resource commitment to the NPD program.

NPD process execution (NPDP) was measured as summated first order factors consisting of predevelopment activities (PRE), development activities (DEV) and commercialisation activities (COM) (Ernst, 2002; Henard and Szymanski, 2001; Langerak et al., 2007).

NPD program success (NPDS) was based on Cooper and Kleinschmidt (1995) with respondents asked to rate NPD program performance relative to competitors. Items include overall program profitability, sales impact of new products, success of new products in meeting sales and profit objectives, profit impact of new products, and profitability relative to competition. These measures are consistent with Kleinschmidt et al. (2007) evaluation of the financial performance of the NPD program. Firm performance (FIRMP) was measured by three items related to total sales income, market share, and sales growth consistent with Langerak et al. (2007).

### 4.3. Validity and reliability

Measurement properties of the scales (Table 1) were tested firstly through principal components analysis to assess unidimensionality and then via confirmatory factor (CFA) and reliability analyses (range 0.68–0.92). Convergent validity was established with the square root of the average variance extracted (AVE) for each construct being greater than 0.5 (range 0.57–0.79), whilst discriminant validity was established by finding that the correlations between the constructs were all lower than AVE (Sarkar et al., 2001).

## 5. Results

Structural equation modelling (AMOS v17) was employed in a two stage process to test the hypotheses. Firstly a partially mediated model, with direct paths from Market orientation to NPD program success and from NPD orientation to NPD program success, was used to test hypotheses H1 and H4. Contrary to prediction, the direct relationship from Market orientation to NPD program success is rejected (H1:  $\beta = 0.14$ ,  $t = 1.387$ ). Similarly, the direct path from NPD orientation to NPD program success (H4) is also non-significant (H4:  $\beta = -0.012$ ,  $t = 0.132$ ). Formal mediation

**Table 1**  
Means, standard deviations, reliability coefficients, average variance extracted.

Variables	Mean (std. dev.)	1	2	3	4	5	6	7	Ave.
1 NPD program success (NPDS)	3.54 (0.81)	<i>0.90<sup>a</sup></i>							0.78
2 MKT orientation (MO)	3.49 (0.56)	0.24**	<i>0.70</i>						0.62
3 NPD orientation (NPDO)	2.97 (0.70)	0.23**	0.38***	<i>0.80</i>					0.75
4 NPD process	3.38 (0.63)	0.46***	0.46***	0.51***	<i>0.80</i>				0.77
5 Proficient predevelopment (PRE)	3.52 (0.69)	0.39***	0.42***	0.46***	0.84***	<i>0.74</i>			0.73
6 Proficient technical development (DEV)	3.30 (0.75)	0.29***	0.42***	0.48***	0.86***	0.63***	<i>0.76</i>		0.72
7 Proficient commercialisation (COM)	3.31 (0.79)	0.49***	0.33***	0.37***	0.85***	0.56***	0.58***	<i>0.82</i>	0.78

\*\*  $p < 0.01$ .

\*\*\*  $p < 0.001$ .

<sup>a</sup> Reliability coefficients are shown in italics on the diagonal.

**Table 2**  
SEM results for fully mediated model.

Path to →	Standardised coefficients and <i>t</i> -values							
	Direct effects				Indirect Effects			
	NPDO	Pre	Dev	Com	NPDS	FIRMP	NPDS	FIRMP
MO	<b>0.452 (3.92)<sup>a</sup></b>	<b>0.344 (3.49)</b>	<b>0.197 (2.31)</b>	0.009 (0.11)	–	–	<b>0.217 (3.15)</b>	<b>0.59 (2.57)</b>
NPDO	–	<b>0.352 (4.02)</b>	<b>0.244 (3.09)</b>	0.101(1.19)	–	–	<b>0.181(3.07)</b>	<b>0.042 (2.22)</b>
NPDP								
Pre	–	–	<b>0.411(5.70)</b>	<b>0.284 (3.46)</b>	<b>0.203 (2.31)</b>	–	–	<b>0.089 (2.22)</b>
Dev	–	–	–	<b>0.343 (4.05)</b>	–0.098 (–1.08)	–	–	0.012 (0.23)
Com	–	–	–	–	<b>0.441 (5.26)</b>	–	–	<b>0.103 (2.02)</b>
NPDS	–	–	–	–	–	<b>0.233 (3.14)</b>	–	–
R <sup>2</sup>	0.21	0.35	0.49	0.41	0.27	0.05		

Model fit:  $\chi^2 = 84.46$  ( $df = 56, p = 0.008$ ); CFI = 0.962; TLI = 0.947; RMSEA = 0.054.

<sup>a</sup> Significant coefficients are shown in bold and can be identified by *t*-values greater than 1.96 ( $p < 0.05$ ).

analysis revealed that the execution of the NPD process fully mediated the relationship between Market orientation and NPD program success (H7a), and also fully mediated the relationship between NPD orientation and NPD program success (H7b).

As a result of this finding a second fully mediated model was assessed. Table 2 presents the standardised coefficients and *t*-values for a fully mediated model of the relationship between Market orientation (MO), NPD orientation (NPDO), the individual NPD process factors (PRE, DEV, COM), NPD program success (NPDS) and firm performance (FIRMP).

The findings support H2 that market orientation has a significant direct influence on firms NPD orientation (H2:  $\beta = 0.452, p < 0.001$ ). Market orientation is also positively related to predevelopment activities (H3a:  $\beta = 0.344, p < 0.001$ ) and development activities (H3b:  $\beta = 0.197, p < 0.05$ ) but not commercialisation activities (H3c:  $\beta = 0.009, ns$ ). Whilst market orientation is shown not to directly influence NPD program success (H1) there is a significant indirect effect ( $\beta = 0.217, t = 2.31$ ). Market orientation also has a weak but significant indirect influence on firm performance ( $\beta = 0.059, t = 2.57$ ).

The NPD orientation of a firm has a significant direct influence on NPD process and its execution, influencing both predevelopment (H5a:  $\beta = 0.352, p < 0.001$ ) and development (H5b:  $\beta = 0.244, p < 0.001$ ). NPD orientation does not have a direct influence on commercialisation (H5c:  $\beta = 0.101, ns$ ), but does have an indirect influence through both predevelopment and development ( $\beta = 0.145, t = 2.42$ ).

NPD orientation does not directly influence NPD program success (H4), but does have a significant indirect effect ( $\beta = 0.181,$

$t = 3.07$ ). NPD orientation is also shown to have a weak significant indirect influence on firm performance ( $\beta = 0.042, t = 2.22$ ).

Analysis further illustrates that the NPD process plays a significant role in the success of the NPD program. In particular, predevelopment activities (H6a:  $\beta = 0.203, t = 2.30$ ) and commercialisation activities (H6c:  $\beta = 0.441, t = 5.25$ ) were shown to directly influence program success. Development activities had no significant direct influence on program success (H6b:  $\beta = -0.09, t = 0.28$ ) but did have an indirect effect ( $\beta = 0.151, t = 2.52$ ).

The direct effects hypotheses are summarised in Table 3. Overall, the findings highlight that firm performance based on NPD results from complex and integrated relationships between the firms cultural and structural resources associated with undertaking NPD and the capabilities associated with the execution of the NPD process.

**6. Discussion and managerial implications**

Performance based on the development of successful new products is at the heart of many business strategies. Critically, firms must look beyond the success of single products and consider a program of NPD and the factors that provide the basis for sustained NPD success and subsequent firm performance. The rationale is that interactions between resources and capabilities which may exist at the NPD program level might be missed in a product level analysis.

The major contribution offered by this research is a detailed understanding of the relationship between NPD-related resources, capabilities and performance. This research adds to the growing evidence of the mediating role of NPD process capabilities in transforming NPD resources into performance outcomes (Kleinschmidt et al., 2007).

Specifically the main contributions are (1) the development of a market orientation within a firm has a positive influence on the NPD process, its management and subsequently performance; (2) similarly a firm with a high NPD orientation will have a superior NPD process and subsequently performance. (3) Investment in resources is necessary but insufficient as the resource – performance link is fully mediated by a capability – the NPD process.

Interestingly it was found that the resources of market orientation and NPD orientation did not influence all elements of the NPD process. Whilst there was a relationship between these resources and the predevelopment and development stages of the NPD process, no relationship was found with the commercialisation stage. We suggest that that this is because the activities conducted in the early stages of the NPD process are solely within control of the firm and the NPD team and thus the resources are able to be transformed. Conversely the commercialisation stage of the NPD process is more influenced by marketplace conditions at the time of

**Table 3**  
Summary of direct effects hypothesis.

Independent variable	Dependent variable	Result	Sig.
<i>Direct effects</i>			
H1: Market orientation →	NPD program success	–	ns
H2: Market orientation →	NPD orientation	Confirmed	***
H3a: Market orientation →	Predevelopment	Confirmed	***
H3b: Market orientation →	Development	Confirmed	**
H3c: Market orientation →	Commercialisation	–	ns
H4: NPD orientation →	NPD program success	–	ns
H5a: NPD orientation →	Predevelopment	Confirmed	***
H5b: NPD orientation →	Development	Confirmed	**
H5c: NPD orientation →	Commercialisation	–	ns
H6a: Predevelopment	NPD program success	Confirmed	*
H6b: Development	NPD program success	–	ns
H6c: Commercialisation	NPD program success	Confirmed	***
H8: NPD program success	Firm performance	Confirmed	**

\*  $p < 0.05$ .

\*\*  $p < 0.01$ .

\*\*\*  $p < 0.001$ .

launch of the product. Particular vagaries of retail intermediaries and other actors within the channel are likely to have a greater impact on this stage of the process than specific internal resources. However our results show that the three stages of the process are interrelated in nature with each stage affecting the next.

### 6.1. Managerial implications

This study highlights the importance of interactions between resources and capabilities for enhancing performance based on product development. The findings suggest that establishing the structural and cultural foundations for success in the form of resources e.g. market orientation and NPD orientation is important but not sufficient. It is not until firms create process execution capabilities that such resources can be translated into outcomes that support and build strong market positions (Ngo and O’Cass, 2008; Madhavaram and Hunt, 2008; Olavarrieta and Friedman, 2007). Implications for managers related to the main areas of the model are presented.

#### 6.1.1. Market orientation

Market orientation as a culture contributes to a successful NPD program by legitimising the need to have customer input into both the strategy that guides NPD program efforts and in the upfront activities that underpin the design of the NPD process. Further, a market orientation facilitates cross-functional communication and coordination of projects in the program and ensures that employees understand the need to focus on producing value for customers. This orientation helps managers to ensure that having a market focus is not solely the responsibility of the marketing department but is part of the broader mental model of the firm. As Langerak et al. (2007) suggest embedding a market orientation involves gaining firm-wide commitment to the core values inherent in this orientation and developing the requisite resources incentives, skills, new systems and processes, and continuous learning to implement the core values.

Similarly, a market orientation helps inform the development of strategy for guiding NPD efforts by promoting the importance of a clear understanding of competitors and the basis for competitive advantage. Regarding the NPD process, a strong market orientation promotes mechanisms to enable early customer input and involvement and speeds up both the definition of the market opportunity and the understanding of value desired by customers. This ensures that the activities of ideation and concept development are market focused. Finally, a market orientated firm is more accepting of the uncertainty that is inherent in any NPD endeavour and facilitates an environment that supports a culture of NPD and innovation.

#### 6.1.2. NPD orientation

NPD orientation as a resource has a significant influence on the NPD process. This association is important and has not been fully examined in existing literature (Cooper and Kleinschmidt, 1995; Kleinschmidt et al., 2007). Firms’ arrangements for NPD, including clear lines of responsibility and accountability, and strong cross functionality, enhance both the predevelopment and development stages of the NPD process.

Effective predevelopment is in part a function of how well designed and embedded the firms NPD process is. The willingness to adopt newer stage-gate or similar NPD process models that facilitate clear evaluation of ideas and concepts and that recognise the need for flexibility and speed in development can enhance the effectiveness of predevelopment activities (Cooper and Kleinschmidt, 1995).

Technical development, that is, those tasks related to prototype development, testing and manufacturing start-up are also

subject to the same NPD-related firm arrangements. In particular, the provision of sufficient resources to produce, bench test and field test products with consumers is essential for ensuring only those offering superior value get to market. Cross-functional cooperation is particularly important, especially if, as is the case with many food producers, there is a physical separation between the marketing function and the manufacturing/R&D function.

#### 6.1.3. NPD process

The NPD process is a core capability and is shown in this research to have a significant influence on the success of the NPD program and subsequently the overall performance of the firm. This finding is in line with Kleinschmidt et al. (2007) who found support for the processes’ impact on ‘window-of-opportunity’ as a measure of program success. In particular, the activities associated with predevelopment and commercialisation are directly related to the success of the NPD program, whilst technical development of the product has an indirect influence. Managers need to pay particular attention to the up-front homework activities of the NPD process and develop the skills and abilities of personnel involved in this phase. The very early stage of the NPD process sets the scene for the remaining stages and is a significant precursor in bringing forward successful new products.

Managers should also pay attention to preparing for commercialisation, including working with retailers and communication agencies, and also ensuring that stock is shipped with a minimum of delay and at sufficient quantities. In the face of increasing international and domestic competition food marketers need to give due consideration to the actual launch of products that emanate from their program and indeed, the follow-up servicing of key accounts and consumers.

## 7. Limitations and future research

As with all research there are several limitations that must be addressed. Firstly this study uses a single industry, which whilst beneficial in terms of removing some of the confounding issues of multiple industry studies has implications for generalisability. Secondly this study uses the single key informant approach and self-reporting. Future research should consider forms of triangulation by using multiple informants with the organisation, collecting objective market and firm data on NPD program performance to balance subjective reporting, and consider longitudinal rather than cross-sectional designs. Thirdly, in the context of RBV, the model excludes other resources that may also contribute to the success of the NPD program, including antecedent factors such as a learning orientation, existence of specific know-how building HR and training policies, and specific organisational structures that have been known to reduce NPD cycle times and remove bureaucracy. Other factors such as the inclusion of reputational assets e.g. customer based brand equity may also help explain both NPD program success and firm performance. Finally, accounting for environmental turbulence may provide added insight into the moderate relationship between NPD program success and firm performance.

In summary, this study was motivated by the need to improve the understanding of how cultural and innovation-based resources and capabilities are translated into performance outcomes. Using food manufacturing as a context this study highlights the critical role of NPD process capabilities as a core mechanism to attain positive outcomes. The findings suggest that managers wishing to develop a successful new products program need to pay attention to developing an NPD orientation and a market-oriented culture, and support this with the development of specific NPD process activities.

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