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Selectivity hypothesis and task bind: Explaining gender difference in NPD's cost information and control adoption

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Abstract

Research aims: This study aims to examine how gender will differentiate the effect of cost information and management control system adoption during the New Product Development (NPD) process. The importance of such research lies in the suggested development of gender-diverse teams to achieve optimum performance.

Design/Methodology/Approach: An experimental design was employed to test proposed hypotheses. Data from 117 Accounting undergraduate students as surrogates of professional NPD designers were analyzed using Analysis of Covariance (ANCOVA).

Research findings: Results revealed that female designers, due to comprehensive processing and stereotype threat, achieved more cost-effective designs with specific information and diagnostic control systems. In comparison, males would achieve better performance using relative information and designing in interactive control since they tended to be heuristic and free from stereotyping.

Theoretical contribution/Originality: This research confirms gender differences in NPD. The explanation using the selectivity hypothesis and task bind mechanism contributes to the literature by supporting clear causal relationships in gender-related NPD contexts.

Practitioner/Policy implication: In NPD, management should consider the proper presentation of information across specific users, including across teams with gender variability. Further, the design of the management control system should consider variability once the gender-diverse team has been developed.

Research limitation/Implication: The causal relationship in this study was limited to a specific experimental setting, which did not reflect all complexities in practice. However, the interplay between variables under study leads to the avenue for future research to broaden the test into different metrics of NPD performance, types of information, and possible designer variability.

Keywords: Cost Information; Gender; Management Control Systems; New Product Development; Selectivity Hypothesis; Task Bind



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Introduction

The conventional perspective on accounting, once seen as a barrier to innovation, is evolving towards a modern understanding that accounting has the potential to foster innovation and bolster the creative process. Nixon (1998) attributed the tension between members of the finance department and the more creative individuals in the new product development (NPD) team, such as product designers, to enduring

disagreements rooted in the different approaches to argumentation favored by accountants, who rely heavily on numerical data. Despite the growing acknowledgment in academic literature regarding the significance of accounting within new product development (NPD), there persists a notable gap in understanding the practical application of accounting within an NPD context (Davila, 2000; Bisbe & Otley, 2004; Dunk & Kilgore, 2004; Davila et al., 2009; Jørgensen & Messner, 2010).

Previous research, however, has reported the effect of cost information on NPD performance. In terms of product development innovation, previous research has examined the influence of cost information, strategy, and certain situational factors on the performance of new product development, especially in the aspect of cost-effectiveness. Jatiningsih and Sholihin (2015) confirmed the influence of cost and strategy information, Alfiana and Jatiningsih (2022) exhibited differences in performance between designers with dominant type-A behavioral characteristics, while Nurjanah and Jatiningsih (2023) acknowledged the role of ego depletion conditions in the development process product.

Further, previous research has acknowledged some management control factors that would indicate NPD success, including aligning activities with strategy and maintaining the presence of a clear performance measurement system (Falihat et al., 2024; Dwivedi et al., 2021). This, therefore, leads to the management control system's importance, which should be set in accordance with the objective of an NPD process. Meanwhile, empirical tests in the field of management or judgment decision-making literature still lack evidence in this area.

Decision-making studies demonstrate how decisions will be affected by gender differences. A previous study by Francis et al. (2015) suggests considerable differing results between males and females in their decisions, while Rao and Tilt (2016) highlight the importance of observing gender differences related to corporate decisions. Furthermore, various research (Goodrich, 2014; Breesch & Brenson, 2009; Putrevu, 2001; Meyers-Levy, 1989) confirm how males and females differ in their way of processing information. In the accounting field, Bobek et al. (2015) indicate that male and female accounting professionals may use different decision-making processes. According to the selectivity hypothesis (Meyers-Levy, 1998), female designers and male designers will process information differently. Mode of information processing, which differs between male and female, therefore, may impact information precision's effect on decision performance. This would include processing cost information in NPD. Consequently, the cost information effect on NPD cost-effectiveness, as revealed in a previous study, may be different across genders.

Moreover, the task bind (Feldberg, 2022) explains the existence of stereotype threat in the management context. Females try to disprove a negative group stereotype by doubling down on one set of tasks at the expense of other essential tasks. This can affect female management's behaviors in ways that detract from their performance. In this condition, management control to maintain performance measurement will be a

significant factor. Management control system design will have different effects then, whether for female or male designers in the context of NPD.

Since a prior study suggests a gender-diverse development team to foster innovation (Díaz-García et al., 2013), it is expected that the NPD team will be structured with a mixed proportion of male and female designers. Management has to be sure how they determine the NPD team to achieve optimum performance. By proper behavioral knowledge of such gender's effect on NPD and their usage of cost information, management will be facilitated in generating proper policy regarding the NPD team. Moreover, Birnberg (2011) concludes that although accounting research has shown greater awareness of gender issues in recent years, whether there exist gender differences in terms of accounting decision making is still an open question and calls for more research in this area. As such, investigation should be made on how some factors' effect on NPD performance could change due to different designers, which could be different genders, male or female.

In sum, from previous literature, it is acknowledged that cost information and management control have a vital role in determining NPD performance (Booker et al., 2007; Jatiningsih & Sholihin, 2015; Alfiana & Jatiningsih, 2022; Nurjanah & Jatiningsih, 2023). Further, it is also confirmed that there will be differences across gender in terms of information processing (Francis et al., 2015; Rao & Tilt, 2016; Goodrich, 2014) and stereotyping (Feldberg, 2022). These two aspects differentiate the effect of cost information and control on NPD cost effectiveness accordingly. While NPD's importance for sustaining innovation becomes intensified, management should have proper knowledge of how gender will differentiate the effect of cost information and control to determine proper policy and make suitable decisions on NPD, the information needed, and the control that may take place.

For that reason, this study aims to examine how gender will differentiate the effect of cost information and management control system adoption during the New Product Development (NPD) process. The issue was observed since cost information and control are crucial in determining NPD performance, and previous research has confirmed the existence of information processing differences and stereotype threats across genders. The importance of such research lies in the suggested development of gender-diverse teams to achieve optimum performance. The result of this study contributes to NPD literature since the experimental result shows the role of designer gender, strengthening theoretical explanations in specific research. Additionally, it contributes practically to organization management in terms of team composition policy in the NPD context as well as in the management control setting.

This research significantly contributes to understanding the selectivity hypothesis and task bind in the context of cost information adoption in new product development (NPD). Highlighting gender differences in the selection and use of cost information reveals how men and women differ in managing this information for control and decision-making. The findings provide valuable insights for managers in handling gender-diverse NPD teams and offer practical recommendations to reduce gender bias in cost information usage.

Additionally, this study extends management control literature by incorporating previously overlooked gender perspectives and linking psychological and management theories with real-world practice. Consequently, it lays the foundation for developing organizational policies that promote gender equality and offers innovative methodologies for further research in this field.

Literature Review and Hypotheses Development

Gender and NPD decision-making

In maintaining its competitiveness, especially in the current business environment with intensified competition and uncertainties, innovation becomes a key point for the organization. As part of the innovation effort, NPD is crucial in the organization phase, which includes all tasks involved in creating new products (Cooper & Kleinschmidt, 1986). Results from Rahatulain et al. (2021) state that decision-making is a crucial factor influencing new product development. This includes the level of quality of information available and the time needed to make a decision. Meanwhile, the results of Jatiningsih and Sholihin (2015) reveal that when designers are facilitated with cost information, it will increase the cost effectiveness of new product design.

Decision-making studies, including in business and accounting contexts, have investigated gender's impact on judgment and decision. A recent study from Francis et al. (2015), for example, focuses on the effects of CFO gender on accounting conservatism and examines whether, following a change in CFOs, there is a significant change in accounting conservatism that is attributable to gender. Further, Rao and Tilt (2016) highlight the importance of observing gender differences related to corporate decisions.

Another research from Bobek et al. (2015) investigates the effects of professional role, decision context, and gender in ethical decision making. The results of that study uncovered that male accountants made different decisions when they encountered ethical dilemmas in an audit versus tax context. Former studies also suggest that gender may impact auditors' judgments (Gold-Nöteberg et al., 2009), as well as accruals quality (Ittonen et al., 2013).

Previous research has suggested that males may have a reduced tendency to follow rules and regulations in financial and tax decisions (Baldry, 1987; Barnett et al., 1994; Bernardi & Arnold, 1997; Fallan, 1999; Pierce & Sweeney, 2010). O'Donnell and Johnson (2001) found that in a low client-risk context, male auditors exert less effort in an analytical procedure-processing task than female auditors, while Chung and Monroe (2001) showed that male auditors perform worse than female auditors in an inventory valuation task due to less comprehensive information processing. In addition, Breesch and Branson (2009), investigating gender differences' effect on audit quality, suggest a significant influence on the manner in which information is collected and processed.

NPD gender-diverse demand

Díaz-García (2013) proposes that it is gender diversity – the mix of women and men and the dynamics generated when they work in a team – that favors innovation and encourages R&D teams to develop projects that involve drastic changes. The literature observes that having women within teams improves soft management skills and decision-making processes and enhances creativity and innovation (Bagshaw, 2004; Dessler, 2001). Additionally, a recent study by Ostergaard et al. (2011) found that firms with a more balanced gender composition are more likely to innovate than firms with a high concentration of one gender.

Gender diversity in R&D teams may improve the results of interactive decisions (Fenwick & Neal, 2001), broaden the perspective, and contribute to better social relations and an open work climate and debate (Nielsen & Huse, 2010a, 2010b); conditions that benefit a higher degree of radicalness of innovations (Hoegl et al., 2003).

Selectivity hypothesis and NPD cost information usage

Women process information in a different way than men. The selectivity hypothesis (Meyers-Levy, 1989) predicts that women are more comprehensive processors. Women process all or most of the available information. Men, however, tend to be selective information processors. They focus on a single cue or cues with a single interference. This difference disappears, however, in certain task-related circumstances depending on the task complexity.

As discussed in Putrevu (2001), the Selectivity Hypothesis from Meyers-Levy (1989) theorizes that gender differences in information processing emerge because, under certain conditions, men are more likely to be driven by overall message themes and women are more likely to engage in detailed elaboration of messages. Specifically, men are ‘selective processors’ and tend to be heuristic, who often rely on a subset of highly available and salient cues in place of detailed message elaboration. Women are ‘comprehensive processors’ who attempt to assimilate all available information before rendering judgment. This model also suggests that women have a lower threshold for elaborative processing than men.

These differences may also be biological in nature. For example, recent clinical studies indicate that these differences may originate in the difference in brain lateralization between genders: the two hemispheres are more symmetrically organized (integrated) in females and more specialized in males (Everhart et al., 2001; Saucier & Elias, 2001). Males rely heavily on right-hemisphere processing, denoted by reliance on global rules, whereas females primarily rely on left-hemisphere processing, which concerns the specificities and intricacies represented or implied by stimulus information (Meyers-Levy, 1994). These differences in brain functionality suggest that males would favor a more holistic, undifferentiated manner of processing while females should pursue a more detailed, elaborative processing style supporting the selectivity hypothesis (Arcand & Nantel, 2005).

Gender's role becomes essential related to information processing in NPD stages to achieve cost effective design. Female designers, as more comprehensive information processors, will respond more effectively to the higher precision of information. As posited by the selectivity hypothesis, this is because they possess a lower threshold at which they apprehend information. This renders females more likely to detect, elaborate more extensively, and use relatively less accessible and more distally relevant information when forming assessments (Meyers-Levy, 1989; Meyers-Levy & Maheswaran, 1991; Meyers-Levy & Sternthal, 1991).

In comparison, male designers, as selective information processors, will respond less effectively to higher precision of information. Relative to females, males rely more on less effortful heuristics. These heuristics frequently involve relying on cues that are highly salient, relevant to the self (versus others), singular in number or theme, or cues that activate well-developed, easily accessible notions or preconceptions (Meyers-Levy, 1989; Meyers-Levy & Maheswaran, 1991; Meyers-Levy & Sternthal, 1991).

The need to test gender information processing differences lies in the implication that gender differences are conditional and will not always occur (Breesch & Branson, 2009). Because gender differences stem from females' relatively lower threshold for detecting and using target data, gender differences should be obtained only when access to such data is above females' but below males' threshold. Whether it will occur in different levels of information precision still needs to be further tested.

While more precise cost information should lead to higher cost-effectiveness of the product, different ways to process the information between female and male designers may lead to contrary expectations. Reverse relationships will exist in two conditions. First is the condition when more precise information is used to facilitate NPD to achieve a cost-effective product, given that the new product designer is female. Since females process information comprehensively and use an intense level of cognition, specific cost information is used thoroughly and underlies the choice of materials in building the new product. In this circumstance, more precise cost information indeed produces a more cost-effective product design.

Second is the condition when more precise information is used to facilitate NPD to achieve a cost-effective product, given that the new product designer is male. Different from females, males selectively process the information and focus on information that is relatively quick to analyze. By this process, relative cost information will be fit for male designers. In this case, consequently, more precise cost information may not produce a cost-effective product design as expected. The choice of materials in designing a new product will be based on rough calculations. Facilitating male designers with higher precision of information will lower the cost-effectiveness of new products that have to be designed.

In sum, the first hypotheses proposed in this study are as follows:

H_{1a}: Female designers using specific cost information produce more cost-effective products than female designers using relative cost information.

H_{1b}: Male designers using relative cost information produce more cost-effective products than male designers using specific cost information.

The task binds and NPD management control system adoption

Stereotype threat, the risk of fulfilling a negative stereotype about one's social group (Steele & Aronson, 1995), may influence how females approach and execute their jobs differently from males. Since females in the management often have leeway in their tasks, their methods are significant (Mintzberg, 1973; Stewart, 1982; Bloom et al., 2019; Ranganathan & Shivaram, 2021), not only for their performance but also for their subordinates' behaviors and performance (House, 1971). Given the significant impact of management's actions on performance, it is crucial to grasp how stereotype threat manifests in the daily work of female and potentially hinders their progression into performance.

Faced with detrimental stereotypes that challenge their managerial authority, women encounter what Feldberg (2022) terms a "task bind": as females choose tasks, they perceive adverse outcomes regardless of their decision. To counteract negative stereotypes regarding their dedication and capability, females emphasize tasks performed in front of an audience, especially their subordinates. However, prioritizing tasks observable by subordinates detracts from equally vital tasks that cannot be showcased publicly. As a result of this tendency, the performance of female and their departments declines.

Mitigating such a phenomenon will lead to the importance of a management control system properly designed to maintain a performance measurement system so that there will be no stereotyping effect that will undermine performance. The key success factors of NPD also reveal the factors from management control, which are aligning activities with strategy and maintaining the presence of a clear performance measurement system (Falahat et al., 2024; Dwivedi et al., 2021).

According to Simons (2000), there is the notion of a diagnostic and interactive management control system. Information from control systems can serve two main purposes: firstly, it can be utilized for diagnostic purposes to confirm that the organization is progressing as intended towards its goals; secondly, it can be employed interactively to facilitate vertical communication throughout the organization, thereby conveying the concerns of top management. Müller-Stewens et al. (2020) revealed the role of diagnostic and interactive control uses in innovation, which underlines the appropriateness of specific control adoption in the innovation process. Since NPD is part of an innovation effort (Cooper & Kleinschmidt, 1986), proper management control adoption will also have

a relationship in NPD with the gender diversity team. Female and male NPD designers with different stereotyping threat conditions produce different performances under different control. With stereotyping threats, a female designer should be evaluated in diagnostic control, which underlines negative feedback as a measure of performance evaluation. Meanwhile, a male designer who has no threat will perform better with interactive control, which facilitates and gives more involvement in the process of NPD.

To conclude, the second hypothesis that this investigation suggests is as follows:

H_{2a}: Female designers under the diagnostic control system produce more cost-effective products than male designers.

H_{2b}: Male designers under an interactive control system produce more cost-effective products than under a diagnostic control system.

Research Method

Participants

This research involved 117 accounting study program students from the Faculty of Economics and Business as participants. All participants were in the fifth semester and under 25 years old. The involvement of students as subjects lies in the argument that students as proxies for real product designers in the industry can be a valid methodological choice, provided that researchers give careful consideration to aligning the complexity of the task with the appropriate level of student knowledge (Elliot et al., 2007).

Experimental Task

Given cost information treatment, participants received specific or relative cost information in designing the new product. Since it was intended to observe how new product design performance would vary in terms of its cost-effectiveness across different designer's genders while receiving different cost information, the experiment's matrix was as follows (Table 1):

Table 1 First Experimental Design Matrix

Cost Information	Designer Gender	
	Female	Male
Specific	CELL 1	CELL 2
Relative	CELL 3	CELL 4

A 2 x 2 between-subject factorial design was formed with two factors and two levels each, namely cost information (specific and relative) and categorical designer's gender (female and male), with the following experimental groups (cells) detail: 1) Cell 1 was for female participants with specific types of cost information; 2) Cell 2 was for male participants

with specific cost information types; 3) Cell 3 was for female participants with relative types of cost information; and 4) Cell 4 was for male participants with relative cost information.

Manipulation Check

To ensure that the experimental treatment (manipulation) had been understood by the subject correctly and adequately, a manipulation check was carried out by asking several questions that verified whether (1) subjects correctly understood that they were designed using specific or relative cost information and (2) subjects correctly understood that differences in design choices would result in the different cost-effectiveness of the new product.

Results and Discussion

First Experimental Results

The mean, standard deviation, and number of research observations are presented in Table 2. The homogeneity test was carried out to see whether the variants came from the same population. The homogeneity test in this study was carried out before carrying out ANOVA. If the significance value obtained is greater than 0.05, the variance of each sample is homogeneous, whereas if the significance value is less than 0.05, the variance of each sample is not homogeneous. Based on Table 3, it can be seen that the significance value of NPD and cost information was 0.148 (more than 0.05), indicating that the two variables came from a population with homogeneous variance.

Table 2 Descriptive Statistics

		Gender		Total
		Female Designer	Male Designer	
Specific	Mean	3.33	3.57	3.42
	SD	1.04	0.96	1.01
	N	36	19	55
Relative	Mean	3.74	3.25	3.61
	SD	0.92	0.93	0.95
	N	46	16	62
Total	Mean	3.56	3.43	3.52
	SD	0.99	0.95	0.98
	N	82	35	117

Table 3 Test of Homogeneity of Variance

Levene Statistics	df1	df2	Sig.
1.563	7	225	0.148

Notes: Dependent Variable: NPD Cost Effectiveness

It can be acknowledged from the ANOVA results (Table 4) that there was no effect of cost information or designer gender alone on NPD cost-effectiveness. Meanwhile, the interaction of cost information and gender exhibited a significant effect (p-value = 0.046) on this specified NPD performance.

Table 4 ANOVA Results

Factors	M S	F-Stat	p-value	R ²
Cost Information	0.048	0.052	0.821	0.064
Gender	0.186	0.200	0.655	
Cost Information*Gender	3.802	4.091	0.046**	
N = 117				

Notes: Dependent Variable: NPD Cost Effectiveness; Covariate: Experience and GPA; **p-value < 0.05

As the selectivity hypothesis explains, females will perform comprehensive information processing, and males will perform a heuristic process. This leads to a difference when female and male designers receive different types of information, such as cost information of materials to be used in designing new products. Therefore, results from the ANOVA test above confirm this notion.

Identified from Table 2, NPD cost-effectiveness of female designers under specific information (cell 1) compared to relative (cell 3) displayed higher performance in cell 1 (less number showed more cost-effective design). Meanwhile, for relative cost information, NPD cost-effectiveness would be higher for males (cell 4) compared to females (cell 3).

The selectivity hypothesis (Meyers-Levy, 1989) argues that there will be differences between male and female individuals in processing information, and this notion is confirmed in the NPD designer context based on this result. Specific cost information leads to higher performance in NPD when the female designer uses it as a comprehensive processor. Meanwhile, relative cost information leads to higher performance when a male designer uses it as a heuristic processor. Previous research has observed and revealed relevant findings in information processing, including Meyers-Levy and Maheswaran (1991), Meyers-Levy and Sternthal (1991) and Breesch and Branson (2009), conveying the current result's consistency of the concept. Novel evidence from a specific NPD context is the point underlined in this study.

Management Control System and Gender

Experimental Matrix

Participants were provided with diagnostic or interactive control conditions during the development of the new product as a result of the management control system treatment. The experiment's matrix is as follows (Table 5), as it was intended to investigate the cost-effectiveness of new product design performance in the specific control condition across various designers' genders.

Table 5 Second Experimental Design Matrix

Management Control System	Designer Gender	
	Female	Male
Diagnostic	CELL 1	CELL 2
Interactive	CELL 3	CELL 4

Second Experimental Results

The mean, standard deviation, and number of observations in this study are summarized in Table 6. Table 7 demonstrates that the significance value of NPD and management control system was 0.300, greater than 0.05. This suggests that the two variables were derived from a population with homogeneous variance.

Table 6 Descriptive Statistics

		Gender		Total
		Female Designer	Male Designer	
Diagnostic	Mean	3.42	3.72	3.51
	SD	0.90	0.95	0.92
	N	40	18	58
Interactive	Mean	3.69	3.12	3.53
	SD	1.07	0.86	1.03
	N	42	17	59
Total	Mean	3.56	3.43	3.52
	SD	0.99	0.95	0.98
	N	82	35	117

It is evident from the ANOVA results (Table 8) that the cost-effectiveness of NPD was not influenced by the management control system or designer gender alone. In the interim, the performance of the specified NPD was significantly influenced by the interaction of gender and the management control system (p-value = 0.032).

Table 7 Test of Homogeneity of Variance

Levene Statistics	df1	df2	Sig.
1.235	3	113	0.300

Notes: Dependent Variable: NPD Cost Effectiveness

The task bind mechanism (Feldberg, 2022) elucidates that gender stereotypes pose a hazard to females while males are not subject to stereotyping. The impact of MCS on the cost-effectiveness of NPD is contingent upon the gender of the designer. An interactive control is a suitable design that can enhance NPD performance, as males are not subject to stereotyping. The cost-effectiveness of NPD for male designers under diagnostic (cell 2) and interactive (cell 4) conditions was found to be higher in cell 4 (a lower number of designs indicated a more cost-effective design), as indicated by the descriptive statistics in Table 6. Concurrently, the cost-effectiveness of NPD would be lower for females (cell 3) than for males (cell 4) under interactive control.

Table 8 ANOVA Results

Factors	M S	F-Stat	p-value	R ²
Management Control System	0.636	0.679	0.412	0.057
Gender	0.213	0.227	0.634	
Management Control System*Gender	4.405	4.703	0.032**	
N = 117				

Notes: Dependent Variable: NPD Cost Effectiveness; Covariate: Experience and GPA; **p-value < 0.05

Since women have the effort to disprove negative stereotypes, they tend to double-task in front of subordinates to showcase their qualifications but at the expense of other essential tasks. When a control system sets a mechanism – once negative feedback from an essential task exists, it is considered in performance appraisal – it will be an effective tool to maintain performance. The result is consistent with previous research concerning task bind mechanism in management, such as from the work of Schein et al. (1996), Phelan and Rudman (2010), Hoyt and Murphy (2016), and Correll et al. (2020). In the context of NPD performance, the importance of such a result lies in the suggested development of gender-diverse teams and in setting proper control systems to achieve optimum performance. Theoretical explanation following Feldberg (2022) of such effect from management control setting during NPD sheds light on a novel aspect of this research.

Conclusion

This study aims to examine how gender differentiates the effect of cost information and management control system adoption during the New Product Development (NPD) process. First, the experimental result exhibited a joint effect, both for cost information and management control systems, with gender. Gender differences will interact with cost information and management control systems in affecting NPD cost-effectiveness as the metric for performance. The selectivity hypothesis (Meyers-Levy, 1989) argues that there will be differences between male and female individuals in processing information, and this notion is confirmed in the NPD designer context. Specific cost information leads to higher performance in NPD when female designers use it as a comprehensive processor. Meanwhile, relative cost information leads to higher performance when male designers use it as heuristic processors.

Second, analysis of the experiment result revealed that for male designers, higher performance in NPD would be achieved under interactive management control if compared to the diagnostic one. The condition will be different for female designers, who performed better under diagnostic control. Task bind explains that female individual receives stereotype threat, which drives differences in management (Feldberg, 2022). With this explanation, negative feedback considered in the performance measurement system as one of the diagnostic tools will be effective for female designers in improving performance. Despite the fact that they are making an effort to disprove negative stereotypes, women often engage in double-tasking to demonstrate their qualifications to subordinates. However, this often comes at the expense of other essential duties. A control system that establishes a mechanism that considers negative feedback from an essential task in performance appraisals will be an effective tool for maintaining performance. The context in this instance pertains to the efficacy of NPD. The significance of this research is the proposed development of gender-diverse teams to attain optimal performance.

The limitation of this research is that the causal relationship tested in this study was limited to a specific experimental setting, which did not reflect all the complexities in real NPD practice. However, significant finding on the interplay between variables under study leads to the avenue for future research to broaden the test into different metrics of NPD performance, different types of information, and possible designer characteristic variability.

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Wardani & Jatiningsih

Selectivity hypothesis and task bind: Explaining gender difference ...

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Conflicts of Interest

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