VOLUME 12 No. 1, 22 Desember 2022 Halaman 1-18

ORGANIZATIONAL INTERNAL AND EXTERNAL RESOURCES AS DRIVERS OF SUCCESS IN PRODUCT DEVELOPMENT: A CONCEPTUAL MODEL

SUMBER DAYA INTERNAL DAN EKSTERNAL ORGANISASI SEBAGAI PENDORONG KESUKSESAN PENGEMBANGAN PRODUK: SUATU MODEL KONSEPTUAL

*Trifandi Lasalewo**
Department of Industrial Engineering, Universitas Negeri Gorontalo, Indonesia

Budi Hartono, Subagyo, **and** *Hari Agung Yuniarto*
Department of Mechanical and Industrial Engineering,
Universitas Gadjah Mada, Yogyakarta

Submitted:31-05-2021; Revised:07-06-2022; Accepted:12-06-2022

ABSTRAK

Produk dapat menjadi sukses jika mampu memenuhi harapan dan keinginan konsumen. Adapun kemampuan perusahaan atau organisasi untuk menghasilkan produk sukses, ditentukan oleh banyak variabel termasuk kemampuan perusahaan dalam memenuhi sumber daya internal dan eksternal perusahaan. Studi yang dilakukan ini bertujuan untuk membangkitkan variabel-variabel yang memiliki dampak terhadap produk sukses. Alat yang digunakan untuk membangkitkan variabel penelitian adalah *software VOSviewer*. Alat ini mampu memetakan data jaringan bibliometrik yang berasal dari data Scopus, guna menghasilkan peta penelitian dari publikasi-publikasi sebelumnya. Setelah itu, dilakukan penelusuran mendalam atas variabel-variabel yang telah berhasil diidentifikasi dengan menggunakan *systematic review technique,* dan mengelompokkannya kedalam faktor internal dan faktor eksternal perusahaan yang memiliki dampak atau pengaruh terhadap sukses atau tidaknya produk. Studi ini menghasilkan output utama berupa suatu model konseptual yang mampu menjelaskan dampak sumber daya internal dan eksternal perusahaan yang mempengaruhi sukses atau tidaknya produk. Terdapat empat sumber daya internal pendorong kesuksesan produk sukses yakni, karakteristik produk, karakteristik manajemen dan organisasi, kemampuan melakukan inovasi, dan keinginan untuk berbagi pengetahuan di dalam organisasi, serta terdapat satu sumber daya eksternal yakni karakteristik pangsa pasar. Model konseptual yang dihasilkan pada studi ini, selanjutnya akan dijadikan sebagai model penelitian "kesuksesan pengembangan produk" pada penelitian berikutnya.

Kata Kunci: ***produk sukses; sumberdaya internal; sumberdaya eksternal***

*Corresponding author: trifandilasalewo@ung.ac.id

ABSTRACT

Products succeed if they meet customer needs and expectations. However, the capability of a corporation or organization to achieve the success of its products is determined by many variables, including being able to exploit its internal and external resources. This study is aimed to test variables that generate impacts on successful products. With the aid of research tool Vosviewer, a bibliometric network is mapped based on Scopus data of previous publications. Then an in-depth analysis is conducted on variables that are identified with a systematic review technique, in which corporational internal and external factors that have great significance on the success of products are grouped. By virtue of this research, a conceptual model is built to describe how corporational internal and external resources affect product success. It is found driving forces in promoting success of products are four internal resources like product characteristics, organization & management characteristics, innovative, and knowledge sharing, and one external resource market characteristics. The conceptual model built in this study would serve as a model for measuring the success of product development in the subsequent studies.

Keywords: ***product success; internal resources; external resources***

INTRODUCTION

The ability of a company to translate consumer needs into product attributes will determine the success of a product. Product attributes are product characteristics that ensure that the product can satisfy the needs, wants, and expectations of its [1]. The ability of an organization to produce successful product attributes is influenced by the availability of external and internal resources as well as other factors. Based on the literature review, an organization's internal resources in creating a successful product can be explained by the Resource-Based View (RBV) Theory, while the organization's external resources are explained by the Industrial Organization (I/O) Theory. Both theories are able to explain why the final results of an organization's efforts to achieve success may be different from others as their resources are also different.

The RBV Theory considers the internal strength of an organization as its competitive advantage. If the internal resources in the organization are well managed, it will have an impact on increasing organizational performance. Organizational internal resources can be tangible and intangible assets. Tangible assets are in the form of organizational physical resources such as people, land, buildings, machinery, and equipment. Intangible assets are in the form of non-physical resources such as reputation, trademark, intellectual property, knowledge, and organizational culture. Every organization is believed to have different tangible assets and intangible assets, which causes the results of organizations' performance different from each other [2]–[4].

The RBV theory explains that an organization can gain its invincible compatibility as long as it has valuable, imperfectly imitable, rare, and organized resources. This concept is known as the V-R-I-O framework. An organization can obtain its advantage when the resources are only owned by the organization and are difficult to imitate by competitors. As long as the resources possessed by an organization are immobility, the organization's superiority can last a long time [3]–[5].

On the organizational external factors, product success is explained using the Industrial Organization (I/O) Theory. In this theory, the source of organizational competitive advantage comes from an attractive market from which there are four forces that drive global market orientation, namely market, costs, government, and competition [6]. The I/O Theory highlights the aspects of market entry and exit barriers, especially those relating to economic scale, exclusive products, organizational location, or binding agreements with suppliers, as the sources of organizational competitive advantage [7].

The current study thoroughly searched the literature on "variables contributing" to organizational external and internal factors which have an impact on "product success" based on RBV Theory and I/O Theory. This study also introduces a conceptual model

which describes the influence of internal and external factors on the success of product development. This conceptual model can be used as one of the basic references for measuring the dimensions of the success of product development in subsequent studies.

METHOD

In the very beginning, this study posed the question: what variables do influence the success of a product? To answer this question, a literature search using the keyword "product success" was performed on reliable sources, including ScienceDirect, Springer, ProQuest, IEEE Xplore, SAGE, & Emerald Insight. These sources are trusted because they have a good reputation in the fields of science and technology and are widely known. The literature search was also limited to thirty years, i.e., from 1987 until 2022. The time limit for this publication was intended to see the trend towards research on successful products over the past 3 decades. The literature search also paid attention to the country/region of origin of the data source, i.e. the Asian, European and American regions, in order to obtain a comprehensive picture of conditions in different countries.

The literature search on the other Scopus websites, e.g., by using the article title, abstract, and "product success" keyword, found 818 documents. The subsequent search was then minimized on the keyword only and found 204 documents (data accessed on March 16, 2022). The frequently-arising research topics included product development, product design, marketing, innovation, product performance, customer need, customer satisfaction, competition, strategic planning, organizational learning, and sales. These findings were then analyzed with VOS viewer. The results of research mapping using VOS viewer software as illustrated in Figure 1 provide an overview of research topics that correlate with successful products.

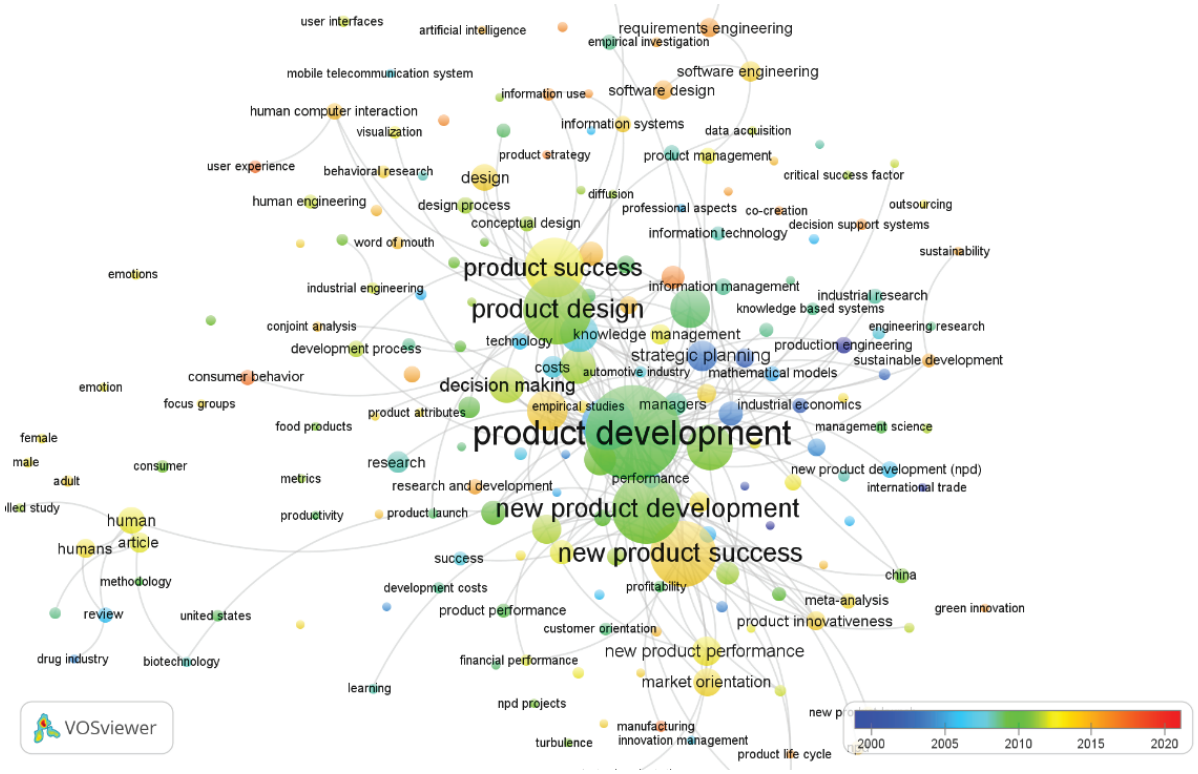

Figure 1.
Visualization of Research on The Network Data-Based Successful Products
(Data accessed in March 16, 2022)

The in-depth literature search obtained several variables that have a direct correlation with "product success". These variables were then identified and grouped into five independent variables (notation X) and one dependent variable (notation Y). The independent is the one that "influences or correlates with product success", while the dependent variable represents the "product success" itself. The five independent variables included: "product characteristics", "management & organizational characteristics", "marketplace characteristics", "innovation", and "knowledge sharing", and the one dependent variable was "product success". We have also done this variable selection previously in Lasalewo *et al*. (2018) [8], [9] in which various successful product variables were grouped and sorted by weight applying the tabulation technique and meta-analysis correlation method. In the tabulation technique, 16 variables were found to be "correlated with product success". Such identification was done using a value of 1 and a value of 0 in which the value of 1 was only given for variables found in the main literature, which were then sorted in accordance to the occurrence level. With the correlation meta-analysis method, the relationship between independent & dependent variables was tested using the value of the correlation coefficient which statistically indicates how close the relationship between the research variables are [8].

In the current study, the five independent variables X were grouped into organizational internal and external factors and converted into predictors. The relationship of the five independent variables with the successful product was defined as a conceptual model. The conceptual model in this study was a model derived from theories, theoretical concepts, and ideas developed by previous researchers or experts to be further examined [10]. Overall, the stages of this study are explained in Figure 2.

One focus of this study is to define successful products, due to the fact that the word "success" has multiple perceptions, and cannot be measured using only one indicator. Product success is impacted by various factors so "the evaluation of the success" of a "product development" must be conducted together with other aspects [11], [12]there is increas- ing pressure to develop and launch more new products; Booz-Allen and Hamilton report that firms expect new products to grow from 33% of corporate sales to 40% in the 198Os, and that the number of new products intro- duced will double [l]. On the other hand, product in- novation remains a very high-risk endeavor, fraught with difficulties and littered with failures. New product failure rates remain high (estimated to be about 33% at launch [2, 3, 7]. Understanding success can also differ between groups involved in "product development", such as the research & development, production departments, and marketing. In addition, there are still few theoretical studies that differentiate the "indicators of success" from "determi-

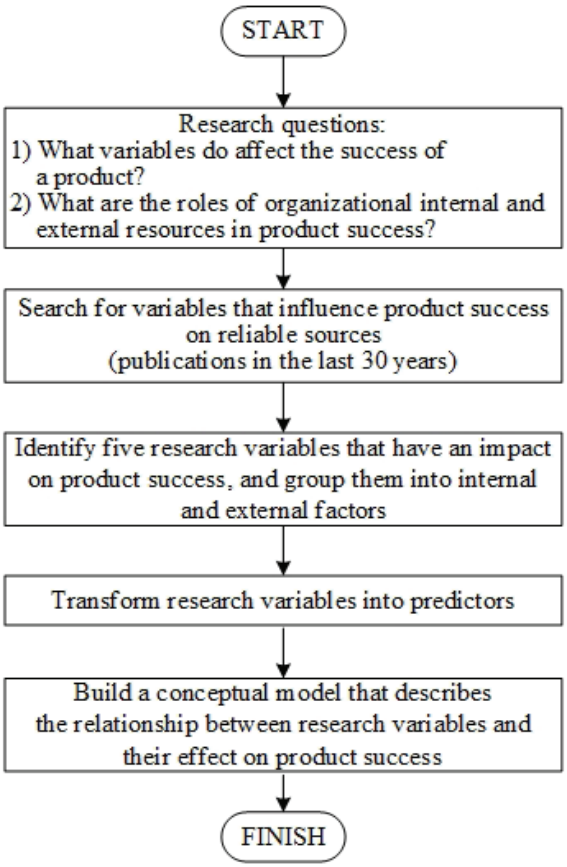

Figure 2.
Stages of The Study [9]

nants of success" of a product [13]measuring new product success has remained elusive. This paper attempts to examine several conceptual issues underlining the measurement of new product success and the measurement practice adopted in Australian small and medium enterprises (SMEs.

In some literature, product success is shown by its performance, such as the ability to generate profits, good sales, a short payback period, and a high proportion of market share. The success can also be evaluated through financial status, customer feedback, and opportunity window [11], [14]–[18]. Based on various literature references, this study defines product success as the ability of the product to generate profits for the company, and "profitability", "foreign market share", "domestic market share", and "sales objectives work" to indicate the success of a product.

RESULTS AND DISCUSSION

Based on the results of an in-depth literature review, there are internal factors and external factors that affect product success. The organizational "internal factors" are explained by the "RBV theory", while the "external factors" are explained by the "I/O theory". Both of these factors consist of research variables. The internal organizational factors are broken down into "four variables", namely "product characteristics", "innovation", "management & organizational characteristics", and "knowledge sharing". The organizational external factors are explained in "one variable", namely "marketplace characteristics". The relationship of these "research variables with product success" is demonstrated through the conceptual model as in Figure 3.

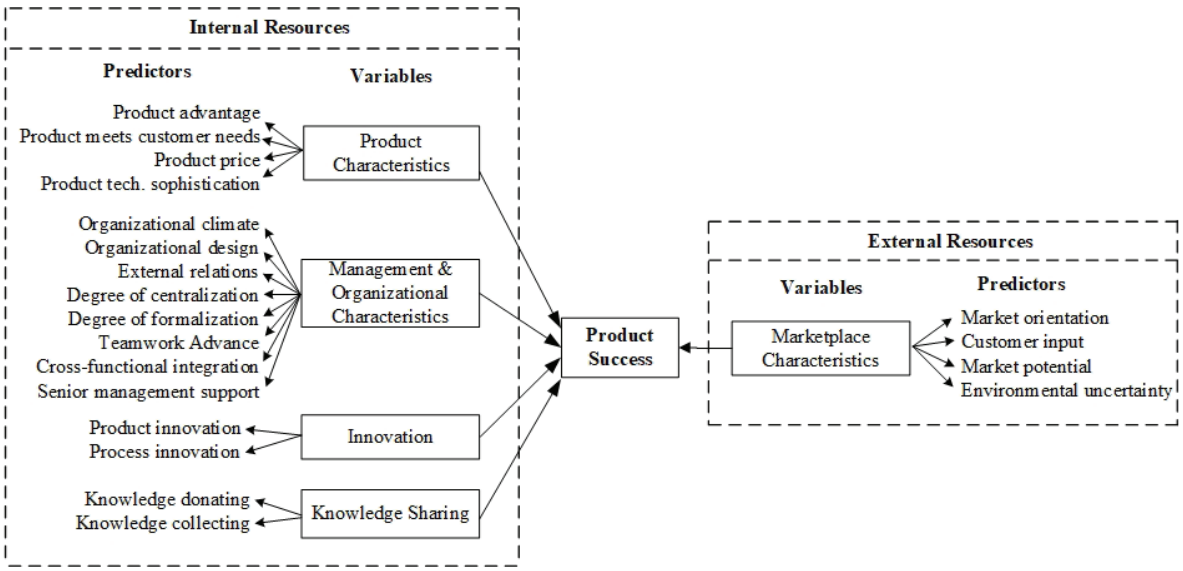

Figure 3.
Conceptual Model of The Relationship of Organizational Internal
And External Resources With Product Success

The current study begins with mapping and grouping previous publications on "product success" using VOS viewer software and then conducting a literature review using the "systematic literature review (SLR)" technique. The use of VOS viewer software is useful for visualizing scientific publications based on the network data which are compiled based on the keyword cluster "product success". Mapping scientific publications using VOS viewer software provides an overview of the research topics (variables) related to successful products. Afterward, the research variables are grouped

into internal and external factors by employing the SLR technique. The systematic review technique can help researchers to be more focused, systematic, directed, and avoid research bias [19]. The process of reviewing the SLR technique consists of three main stages, i.e., collecting references from reliable sources, choosing the appropriate references based on certain criteria (title, keywords, and abstract), and reviewing the main references used in the literature review. The research variables that have been grouped into internal/external factors are then transformed into predictors.

In the studies we have done previously in Lasalewo *et al*. [8], [9], using "the tabulation method and the correlation meta-analysis method", 16 variables are found to be influential to the "product success". The study indicates five main variables that have a major influence on product success, namely "product characteristics", "management & organizational characteristics", "innovation", "knowledge sharing", and "marketplace characteristics" [8].

To identify the variables that correlate to the product success is done in two ways, i.e., using "the tabulation and the meta-analysis correlation". The tabulation method was performed by identifying research variables using scores of 0 and 1 in which a score of 1 was given for variables that were found in 26 major literatures. These identified variables were then arranged according to the occurrence level. The correlation meta-analysis was used to examine the relationship between the independent variable (the variable that "impacts on product success") and the dependent variable ("product success" variable), where the value of "correlation coefficient indicates" the strength of the relationship between the independent variable and the dependent variable [20]. The order of the variables was then determined according to the strength of the influence on product success as shown in Table 1.

The sequences of the research variables in Table 1 shows different results since they employ different measurement concepts. In "the tabulation method", the sequence is arranged based on the percentage of occurrence level in 26 literatures used, while in "the meta-analysis", the sequence is arranged based on the average value of *r* (correlation) in previous studies. The variables that have been obtained are then grouped into internal factors and external factors that affect the product success by using the RBV Theory and I/O Theory.

Table 1.
Comparison of Sequences Resulted From The Tabulation and Correlation Meta-Analysis Lasalewo *et al*. (2018) [8]

Tabulation results	
Variable	**%**
New Product Development (NPD)	13.42
Product Advantage	12.75
Market Orientation	10.74
Mgt. & Organizational Performance	8.05
NPD Speed	8.05
Product Innovativeness	7.38
Technological Advance	7.38
Customer Satisfaction	6.04
Product Characteristic	4.70
Financial Performance	4.03
Product Development costs	4.03
Market Environment	4.03
Product Quality	3.36
Teamwork Advance	3.36
Market Share	2.01
Price	0.67

Correlation meta-analysis results	
Variable	$\bar{r}$
Product Characteristic	0.58
Customer Satisfaction	0.49
Mgt. & Organizational Performance	0.44
Product dvantage	0.40
Technological Advance	0.39
Price	0.38
Market Environment	0.36
Market Orientation	0.33
New Product Development (NPD)	0.32
NPD Speed	0.21
Product Development costs	0.14
Teamwork Advance	0.14
Product Innovativeness	0.11
Financial Performance	0
Market Share	0
Product Quality	-0.15

Organizational Internal Factors

Organizational internal factors that affect product success consist of four variables, including "product characteristics", "management & organizational characteristics", "innovation", and "knowledge sharing". Both "product characteristics" and "innovation" are internal organizational resources that cause organizational outputs (products/services) to be valuable, rare, imperfectly imitable, and non-substitutable. Internal resources in the form of knowledge sharing are valuable and rare as well as have unique characteristics. Meanwhile, the management & organizational characteristics describe an organization's management capability that translates all internal organization resources into successful products.

Regarding the internal influence on the success of product development, research by Huang & Chen (2022) [21]the results of previous studies have been mixed. Many studies have also used the construct of slack to explore how it affects a firm's innovation/performance. Even so, only a vague relationship has been drawn between a firm's slack and its corporate "greening." Drawing on green innovation literature, institutional theory, and firm slack from a resource-based view, we argue that two antecedents (i.e., institutional pressure and the firm's green slack shows that the company's internal pressure has a very large effect on efforts and opportunities to increase product success, especially the success of "green products". Such pressure also plays a role in pushing innovation inside company itself. These results are based on the results of research conducted on 170 Taiwanese high-tech companies, among which are electricity and electronics manufacturers. In these companies, "green innovation and green product innovation (GPI)" has a very large impact on "green new product success (GNPS)", which is defined as the ability of innovation to compete in the market for a green new product. Almost the same thing was also found in the research of Walheiser et al. (2021) [22] conducted on a survey of 137 German export companies. According to Walheiser, the company's internal innovation and external barriers in the market can be the main determinants of the success of a product, because the variable "innovativeness" has a direct impact on "product ", and " centralization", and "formalization" are moderate variables that have an indirect impact on "product performance".

If various internal resources within an organization, both tangible and intangible assets, are managed properly, they can improve the organization's performance [3]–[5]. As long as the organization's resources are immobility, product success and company performance can be maintained.

Product Characteristics

Product characteristics include all elements related to the character inherent in the product. The product characteristics variable is converted into four predictors, i.e. the "product meets customer needs", "product advantage", "product price", and "technological sophistication" [12], [15], [31], [23]–[30].

The product advantage can be described as the superiority of a product compared to other similar products on the market, especially on the dimensions of quality, benefits and product functions [25]. The product will be superior if it has attributes that are in accordance with consumer needs and are able to meet the expectations of its buyers (product meets customer needs). The process of identifying this 'product meets customer needs can be done in various ways, including the Kano technique, QFD (quality function deployment), or the integration of both [32], [33]. QFD is a communication tool between team members involved in a product development project, which can translate consumer needs and wants into a product/service. Through QFD, the product development team can solve problems in a more structured way.

The technological sophistication predictor is a measure of technological sophistication used in developing new products [23], [24]. The use of technology will have an im-

pact on product quality because the better the technology used in product development, the better the quality of the products produced. The use of this technology can solve complex processes and significantly reduce product development time [34].

Through this product characteristics variable, product superiority can be realized through offering innovative product features that actually escape the attention of competitors [1]. In addition, the application of eco-design to products has influenced product success [35], [36]. Various predictors of product characteristics indicate that there are many aspects that affect consumers when choosing a product, which eventually has an impact on product success.

Management & Organizational Characteristics

Management & organizational characteristics can be described as a policy system and a capability to manage organizations so they are able to create quality products. This variable consists of eight predictors, including organizational climate, degree of centralization, degree of formalization, organizational design, external relations, advanced teamwork, senior management support, and cross-functional integration [4], [12], [30], [37]–[42], [15], [16], [22]–[25], [27], [28].

The organizational climate predictor indicates internal organizational conditions related to culture, norms, and values of trust that are believed by each individual in an organization. It is this value or norm that collectively shapes the character and behavior of individuals in an organization [43]. "Organizational culture" is an important aspect because it determines the success or failure of an organization. The survey conducted by Earnest & Young Knowledge Management International Survey (1996) on 431 senior executives found that 80 percent of failures in the implementation of knowledge management were caused by factors of "organizational culture". The organizational culture has a significant influence on individual decisions to share knowledge, build trust, and maintain the spirit of teamwork [44].

The organizational design predictor shows the design of organizational forms, including reward systems and work design [12], [23]–[25]. Formal incentive structures, as well as reward systems, are the main factors that shape the employees' attitude towards sharing their knowledge with their colleagues [45]. The incentive system and organizational culture can be used to stimulate cross-functional employee behavior towards collaboration on creating new products, especially in large companies [46], [47]. The results of a survey of 467 employees in 4 public organizations also show that expected reward, expected contribution, and expected association, are factors that influence employee attitudes towards cooperating with colleagues [48].

In addition, organizational characters that influence the employee character are described as predictors of the degree of centralization and degree of formalization. The centralization prevents employees from making decisions.[49] Conversely, the social interaction that is not limited by rigid formalization will have a positive impact on "knowledge sharing activities", which allow individuals to accumulate their knowledge, thus gaining new knowledge [4], [50].

The advanced teamwork predictor can be analogous to a group of individuals who interact adaptively, dynamically, and interdependently to achieve an organization's shared goals, where each team member is given a specific job role [12], [23], [24]. The members of the new product development team, which come from various fields of manufacturing engineering, expertise such as "product design", "production engineering", "marketing", and "environment", work together to produce new products. The organizational strength lies precisely in the superiority of individuals to collaborate in exchanging their knowledge during a new product development project [51]. Frequently, members of the product development team are not in the same location, but the ex-

istence of information technology has helped the team members work more effectively, for example by implementing Computer Integrated Manufacturing [52].

The cross-functional integration predictor illustrates the participation level of the product development team composed of cross-function in initiating new products [12], [23], [24]. Today, many companies in Japan, Europe, and North America rely on cross-functional teams to develop new products [53]. The number of product development team members varies, ranging from several to hundreds. For instance, a project conducted by the Yahoo! portal only involves 13 developers, while the IBM computer development project involves 200 people on average [54]. In such product development activities, the cross-functional team members often join other groups without having certain structural relations [55].

Innovation

The ability to innovate is an organization's internal resource that encourages the creation of successful products and plays a pivotal part in increasing the productivity of the company [56], [57]. The ability to innovate is considered as a means of increasing organizational profits because through continuous innovation, and successful products will be produced [58], [59].

Through innovation, an organization can implement new ideas to create positive values for the organization [57]. Innovation activities can lead a company to focus on its mission to create new opportunities [21], [60]the results of previous studies have been mixed. Many studies have also used the construct of slack to explore how it affects a firm's innovation/performance. Even so, only a vague relationship has been drawn between a firm's slack and its corporate "greening." Drawing on green innovation literature, institutional theory, and firm slack from a resource-based view, we argue that two antecedents (i.e., institutional pressure and the firm's green slack. Innovation activities are positively correlated with increased organizational performance [58], [59]. Results of the meta-analysis study indicate that innovation activities can improve organizational performance, especially in Small and Medium Industries [61], [62].

In this study, innovation consists of two predictors, namely product innovation and process innovation. Product innovation means the number of products/services produced in an organization, while innovation processes are described as the number of changes in the production and distribution processes performed by an organization [57]–[59].

Knowledge Sharing

Knowledge sharing describes "a social interaction" that involves the communication in knowledge, experience, and skills of individuals (employees) inside and outside the organization. Knowledge sharing also explains the level of someone's positive feelings of their coworkers. The employees' knowledge and skills as personal intellectual capital have great potential for creating values in an organization [40], [51], [63], [64].

There is a belief that organizational performance will increase if the individuals have the desire to share knowledge in the form of information, practice, insight, and experience. The knowledge possessed by individuals in an organization is the most strategic resource since by having intellectual capital, an organization will have superior resources than its competitors [40], [63], [64]. The success of an organization is supported by individuals who mutually exchange diverse knowledge and collaborate synergistically in achieving organizational goals [51].

The Delphi Group study shows that 70% of an organization's knowledge assets lie in the minds of its employees, while 30% are in an externalized form [65]. The employees' behavior towards exchanging their knowledge results in a cycle known as sensemaking, i.e. people listen to other people's conversations, communicate with each other, and then create an understanding of new knowledge obtained when they are working [55], [66].

Knowledge sharing has a positive correlation with product development, even knowledge about product development will develop exponentially when knowledge sharing activities occur [67]. Knowledge sharing in an organization is needed by the product development team to communicate consumer needs with the technical knowledge related to the organization's internal capabilities, which are then used to develop new products. This knowledge sharing results in integrated product development.

The knowledge sharing variable is explained with two predictors, i.e. knowledge donating and knowledge collecting. Knowledge donating is an individual activity of sharing their personal intellectual capital with other people in an organization, while knowledge collecting is an individual process of gathering knowledge that is deemed useful from their colleagues [63], [64], [68]–[70]. Knowledge sharing is an organization's internal strength that is very valuable, rare, and must always be maintained because the desire to share knowledge between individuals is not always present in every organization.

Organizational External Factors

External factors in this study are represented by marketplace characteristics variable that affects product success and have a significant impact on organizational performance. Marketplace characteristics are elements that include target markets, market potential, competitive activity, and competitive intensity (e.g. turbulence) as a reaction to new products [12], [23]–[25]. Marketplace characteristics in this study emphasize four predictors, i.e. market orientation, market potential, customer input, and environmental uncertainty.

The market orientation predictor is described as an organizational orientation towards the internal environment, competitors, and customers. Market orientation describes the organizational norms and values which encourage the organizational behavior towards the market environment [12], [23]–[26], [71]. An investigation of 126 companies in the Netherlands employs market orientation as one of the predictors for measuring the performance of new products. The results of the investigation indicate the impact of the market orientation on product success and overall organizational performance. In addition, the predictors of product advantage and launch tactics are also used to predict product success [26]at least in part, because of the new products that are developed and are brought to market. Others have reinforced this wisdom by revealing that a market-oriented culture enhances organizational innovativeness and new product success, both of which in turn improve organizational performance. These scholars do not reveal, however, through which new product development (NPD.

The market potential predictor is described as a form of organizational anticipation of the growth of customers in the target market [12], [23]–[25]. A meta-analysis study shows a "very strong positive relationship" between market potential and product success opportunity [25]. This reinforces the notion that the market potential has a very significant effect on product success in the market, especially in the North American, European and Asian markets. Besides market orientation, other aspects that need to be considered include "marketing & technological synergies", "pre-development proficiency", and "technological proficiency" [25].

The environmental uncertainty predictor is a measure of the level of uncertainty in the market environment faced by companies, such as regulation and technology. It is a condition when an organization only has little information about its external environment that is always changing so most of it is difficult to predict [12], [23]–[25]. The relationship of environmental uncertainty (consisting of demand uncertainty, technological uncertainty, and company threats) with firm performance has been examined in SMEs in Malaysia [72].

Based on the previous studies, the current study shows several variables and pre-

dictors that influence product success. This study is the first step to measuring the extent to which the influence of internal and external factors on product success and identifying which variables predominantly affect product success. As a comparison, a study conducted by Rothaermel (2012) [73] shows that organizational internal factors have a greater influence than the external factors. The influence of internal factors is 30%-45% on organizational performance, while external factors only affect 20% of organizational performance. Meanwhile, the other 35% -50% influence comes from other factors that are explained by these two factors. Nevertheless, a review conducted by Rothaermel (2012) [73] is limited to showing only the influence of these factors on organizational performance, not the effect on product success.

Based on the analysis above as summarized in Figure 3 (conceptual model), there are 5 main variables that have impacts on product success, namely, "product characteristics", "management & organizational characteristics", "marketplace characteristics", "innovation", and "knowledge sharing" . An in-depth literature study shows there are three groups of methods that help find out product success variables, namely: (1) meta-analysis, (2) case studies, and (3) literature review & conceptual model. The research methods and variables/areas applied in previous studies are illustrated in table 2.

Tabel 2.
Research Areas and Methods Applied in Previous Research

	Variable	Method		
		Meta-analysis	**Case Study**	**Literature Review/ Theory/ Conceptual**
Research Area	Product characteristics	Evanschitzky et al. (2012) [24]; Huang & Tsai (2013) [25]; Suharyanti et al. (2015) [30]; Cankurtaran et al. (2013) [12]; Henard & Szymanski (2001) [23]	Langerak et al. (2004) [26]; Valle & Vazquez-Bustelo (2009) [27]; Gonzalez & Vazquez (2007) [29]; Junfeng & Wei-Ping (2017) [15]	Johansson (2002) [74]; ✓
	Management & organizational characteristics	Evanschitzky et al. [24]; Huang & Tsai (2013) [25]; Suharyanti et al. (2015) [30]	Walheiser et al. (2021) [22]; Langerak et al. (2004) [26]; Wu & Chiu (2015) [42]; Pee & Kankanhalli (2016) [4]; Calantone & Di Benedetto (2007) [75]; Lin (2007) [38]	Johansson (2002) [74] ; ✓
	Marketplace characteristics	Evanschitzky et al. (2012) [24]; Suharyanti et al. (2015) [30]; Eisend et al.[76]; Cankurtaran et al. (2013) [12]; Henard & Szymanski (2001) [23]	Walheiser et al. (2021) [22]; Griffith et al (2021) [77]; Langerak et al. (2004) [26]; Wu & Chiu (2015) [42]; Calantone & Di Benedetto (2007) [75]	✓
	Other	Evanschitzky et al. (2012) [24]; Gao et al. (2013) [78]; Huang & Tsai (2013) [25]; Suharyanti et al. (2015) [30]; Eisend et al. (2016) [76]; Henard & Szymanski (2001) [23]	Griffith et al (2021) [77]; Junfeng & Wei-Ping (2017) [15]; Johnson & Filippini (2013) [16]	-

	Variable	Method		
		Meta-analysis	Case Study	Literature Review/ Theory/ Conceptual
Research Area	Innovation	Evanschitzky et al. (2012) [24]; Cankurtaran et al. (2013) [12]; Szymanski et al. (2007) [79]; Rosenbusch et al. (2011) [61]	Huang & Chen (2022) [21]; Walheiser et al. (2021) [22]; Griffith et al (2021) [77]; Valle & Vazquez-Bustelo (2009) [27]; Gonzalez & Vazquez (2007) [29]; Junfeng & Wei-Ping (2017) [15]; Wu & Chiu (2015) [42]; Tomlinson & Fai (2013) [80]; Liao et al. (2007) [40]; Lin (2007) [38]organizational factors (top management support and organizational rewards	Jalonen (2012) [81]; Huizingh (2011) [82]; Szymanski et al. (2007) [79]; Rosenbusch et al. (2011) [61]; Lasalewo et al. (2016) [66]; Huizingh (2011) [82]; Johansson (2002) [74]; ✓
	Knowledge sharing		Griffith et al (2021) [77]; Liao et al. (2007) [40]; Hooff & Ridder (2004) [63]; Lin (2007) [38]organizational factors (top management support and organizational rewards; Casimir et al. (2012) [83]	Szymanski et al. (2007) [79]; Lasalewo et al. (2016) [66]; ✓

✓ = This study

The publications presented in table 2 describe the position of research and the development trend of product success research over the last twenty years. With the 5 variables referred to in this study, publications that apply the correlation meta-analysis method and can help formulate the research model are widely found. Basically, the correlation meta-analysis method also provides research variables that are ready for further analysis. Existing research that uses the correlation meta-analysis method is a collection of previous studies and is analyzed with the correlation of the constituent variables to the product success variables. Case study based and big data-based publications with this research reference model are found, and there are also publications that review the formation of the basic research model based on literature review, theoretical review, and conceptual model.

CONCLUSION

The ability of an organization to produce successful products is strongly influenced by the availability of internal and external resources. The current study summarizes various previous studies regarding factors mentioned previously as the drivers of product success. This study suggests that there are four internal resource variables, viz. "product characteristics", "management & organizational characteristics", "innovation", and "knowledge sharing", and one external resource variable, viz. "marketplace characteristics". These variables are then converted into predictors of product success.

The internal resources are explained using the RBV theory which emphasizes that tangible assets, intangible assets, and organizational capability are an organization's strengths in producing successful products. If these three assets are managed well, not easily imitated, and immobility, a company with these resources can achieve sustainable

competitive advantage. The organizational external resources are explained using the I/O theory which reveals that the source of organizational strength comes from an attractive market. These external strengths, among others, are indicated by predictors of customer input and market potential.

This study manages to incorporate variables and predictors into the organizational internal and external factors and shows their impact on product success. Through an in-depth literature research, this study also builds a conceptual model that can be used by the future studies to measure the influence of organizational internal and external factors as well as their impact on product success.

In its practice, the measurement of product success is performed on organizations that produce tangible products, not on those producing service products. This study is still limited to the development of conceptual model of variables (internal and external) that have an impact on product success. Hence, further studies will be conducted to prove the dominant variables that affect the product success at ten types of companies as the research samples. In Indonesia, these companies are classified in the double-digit Indonesian Standard Industrial Classification (ISIC). The ten types of companies include: ISIC 10/11 (food products and beverages), ISIC 12 (tobacco products), ISIC 13 (textiles), ISIC 14 (apparel), ISIC 15 (leather, leather products, and footwear), ISIC 16 (wood, products of wood and cork, and woven products from bamboo, rattan and the like), ISIC 22 (rubber, products of rubber and plastic), ISIC 25 (metal, not machinery products, and the equipment), ISIC 31 (furniture), and ISIC 32 (other manufactures).

Acknowledgments

The authors would like to thank Yosephine Suharyanti (Department of Industrial Engineering, Universitas Atma Jaya Yogyakarta, Indonesia), Sunardi (Department of Industrial Engineering, Universitas Negeri Gorontalo, Indonesia), and Musadad (Universitas Riau, Indonesia) for their proofreading and suggestions for improving this article.

BIBLIOGRAPHY

[1] W. C. Kim and R. Mauborgne, *Blue Ocean Strategy: How to Create Uncontested Market Space and Make the Competition Irrelevant*. Massachusetts: Harvard Business School Publishing Corporation, 2005.

[2] J. Barney, "Firm Resources and Sustained Competitive Advantage," *J. Manage.*, vol. 17, no. 1, pp. 99–120, 1991.

[3] J. M. Campbell and J. Park, "Extending the Resource-Based View: Effects of Strategic Orientation Toward Community on Small Business Performance," *J. Retail. Consum. Serv.*, vol. 34, pp. 302–308, 2017.

[4] L. G. Pee and A. Kankanhalli, "Interactions Among Factors in Fluencing Knowledge Management in Public-Sector Organizations: A Resource-based View," *Gov. Inf. Q.*, vol. 33, pp. 188–199, 2016.

[5] H. D. Wang and S. Sengupta, "Stakeholder Relationships, Brand Equity, Firm Performance: A Resource-Based Perspective," *J. Bus. Res.*, vol. 69, pp. 5561–5568, 2016.

[6] A. Bayraktar and N. O. Ndubisi, "The Role of Organizational Mindfulness in Firms' Globalization and Global Market Performance," *J. Res. Mark. Entrep.*, vol. 16, no. 1, pp. 26–46, 2014.

[7] C. Sigalas, "Competitive Advantage: the Known Unknown Concept," *Manag. Decis.*, vol. 53, no. 9, pp. 2004–2016, 2015.

[8] T. Lasalewo, Subagyo, H. A. Yuniarto, and B. Hartono, "Measuring Product Success: A Literature Study," in *2018 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM)*, 2018, pp. 1304–1308.

[9] T. Lasalewo, "Pengaruh Karakteristik Produk, Manajemen & Organisasi, Pasar, Inovasi, dan Berbagi Pengetahuan Terhadap Kesuksesan Produk," Universitas Gadjah Mada, Yogyakarta, 2018.

[10] U. Sekaran and R. Bougie, *Research Methods for Business: A Skill Building Approach*, 5th ed. West Sussex, United Kingdom: John Wiley & Sons Ltd Publication, 2010.

[11] R. G. Cooper and E. J. Kleinschmidt, "Success Factors in Product Innovation," *Ind. Mark. Manag.*, vol. 16, no. 3, pp. 215–223, 1987.

[12] P. Cankurtaran, F. Langerak, and A. Griffin, "Consequences of New Product Development Speed: A Meta-Analysis," *J. Prod. Innov. Manag.*, vol. 30, no. 3, pp. 465–486, 2013.

[13] X. Huang, G. N. Soutar, and A. Brown, "Measuring New Product Success: An Empirical Investigation of Australian SMEs," *Ind. Mark. Manag.*, vol. 33, no. 2, pp. 117–123, 2004.

[14] R. G. Cooper and E. J. Kleinschmidt, "What Makes a New Product a Winner: Success factors at the Project Level," *R&D Manag.*, vol. 17, no. 3, pp. 175–189, 1987.

[15] Z. Junfeng and W. Wei-Ping, "Leveraging Internal Resources and External Business Networks for New Product Success: A Dynamic Capabilities Perspective," *Ind. Mark. Manag.*, vol. 61, pp. 170–181, 2017.

[16] W. H. A. Johnson and R. Filippini, "Integration Capabilities as Mediator of Product Development Practices-Performance," *J. Eng. Technol. Manag.*, vol. 30, pp. 95–111, 2013.

[17] A. Emaputra and Subagyo, "Model Kesuksesan Produk Saniter," *J. Teknosains*, vol. 4, no. 1, pp. 1–21, 2014.

[18] R. Setyaningrum and A. Rahadiyan, "Model Matematis Prediksi Kesuksesan Produk," *J. Teknosains*, vol. 5, no. 1, pp. 29–35, 2015.

[19] J. K. Jesson, L. Matheson, and F. M. Lacey, *Doing Your Literature Review: Traditional and Systematic Techniques*, 1st ed. London: SAGE Publications Ltd, 2011.

[20] J. F. Hair, W. C. Black, B. J. Babin, and R. E. Anderson, *Multivariate Data Analysis*, 7th ed. New Jersey: Prentice-Hall, 2010.

[21] Y. C. Huang and C. T. Chen, "Exploring Institutional Pressures, Firm Green Slack, Green Product Innovation and Green New Product Success: Evidence from Taiwan's High-tech Industries," *Technol. Forecast. Soc. Change*, vol. 174, no. August 2021, p. 121196, 2022.

[22] D. Walheiser, C. Schwens, P. J. Steinberg, and J. W. Cadogan, "Greasing the Wheels or Blocking the Path? Organizational Structure, Product Innovativeness, and New Product Success," *J. Bus. Res.*, vol. 126, no. January, pp. 489–503, 2021.

[23] D. H. Henard and D. M. Szymanski, "Why Some New Products Are More Successful Than Others," *J. Mark. Res.*, vol. 38, no. 3, pp. 362–375, 2001.

[24] H. Evanschitzky, M. Eisend, R. J. Calantone, and Y. Jiang, "Success Factors of Product Innovation: An Updated Meta-Analysis," *J. Prod. Innov. Manag.*, vol. 29, pp. 21–37, 2012.

[25] S. C.-T. Huang and K.-H. Tsai, "Exploring the Drivers of New Product Success for Businesses in Asia: a Meta-analysis," *Asia Pacific Bus. Rev.*, vol. 19, no. 3, pp. 303–319, 2013.

[26] F. Langerak, E. J. Hultink, and H. S. J. Robben, "The Impact of Market Orientation, Product Advantage, and Launch Proficiency on New Product Performance and Organizational Performance," *J. Prod. Innov. Manag.*, vol. 21, no. 2, pp. 79–94, 2004.

[27] S. Valle and D. Vazquez-Bustelo, "Concurrent Engineering Performance: Incremental versus Radical Innovation," *Int. J. Prod. Econ.*, vol. 119, pp. 136–148, 2009.

[28] C. D. Storey and C. J. Easingwood, "Determinants of New Product Performance: a Study in the Financial Services Sector," *Int. J. Serv. Ind. Manag.*, vol. 7, no. 1, pp. 32–55, 1996.

[29] B. U. Gonzalez and J. M. C. Vazquez, "The Strategic Influence of Structural Manufacturing Decisions," *Int. J. Oper. Prod. Manag.*, vol. 27, no. 6, pp. 605–626, 2007.

[30] Y. Suharyanti, Subagyo, N. A. Masruroh, and I. Bastian, "The Role of Product Development to Drive Product Success: An Updated Review and Meta-Analysis," in *Lecture Notes in Electrical Engineering*, Berlin: Springer, 2015, pp. 501–510.

[31] Y. Suharyanti, Subagyo, N. A. Masruroh, and I. Bastian, "A Multiple Triangulation Analysis on the Role of Product Development Activities on Product Success," *Int. J. Eng. Bus. Manag.*, vol. 9, pp. 1–15, 2017.

[32] T. Lasalewo, "Integrasi Model Kano Dan Teknik QFD Dalam Kegiatan Pengembangan Produk: Suatu Tinjauan Kritis," in *Seminar Nasional Seni & Desain: Membangun Tradisi Inovasi Melalui Riset Berbasis Praktik Seni dan Desain*, 2017, pp. 380–385.

[33] X. . Shen, K. . Tan, and M. Xie, "An Integrated Approach to Innovative Product Development using Kano's Model and QFD," *Eur. J. Innov. Manag.*, vol. 3, no. 2, pp. 91–99, 2000.

[34] S. Husig and S. Kohn, "Computers in Industry Computer Aided Innovation - State of The Art from a New Product Development Perspective," *Comput. Ind.*, vol. 60, pp. 551–562, 2009.

[35] G. Johansson, "Success Factors for Integration of Ecodesign in Product Development: A Review of State of The Art," *Environ. Manag. Heal.*, vol. 13, no. 1, pp. 98–107, 2002.

[36] S. Ritzén and C. Beskow, "Actions for Integrating Environmental Aspects into Product Development," *J. Sustain. Prod. Des.*, vol. 1, pp. 91–102, 2001.

[37] F. T. J. M. Fortuin, M. H. Batterink, and S. W. F. Omta, "Key Success Factors of Innovation in Multinational," *Int. Food Agribus. Manag. Rev.*, vol. 10, no. 4, pp. 1–24, 2007.

[38] H.-F. Lin, "Knowledge Sharing and Firm Innovation Capability: An Empirical Study," *Int. J. Manpow.*, vol. 28, no. 3, pp. 315–332, 2007.

[39] M. D. Peters, B. Wieder, S. G. Sutton, and J. Wakefield, "Business Intelligence Systems use in Performance Measurement Capabilities: Implications for Enhanced Competitive Advantage," *Int. J. Account. Inf. Syst.*, vol. 21, pp. 1–17, 2016.

[40] S. H. Liao, W. C. Fei, and C. C. Chen, "Knowledge Sharing, Absorptive Capacity, and Innovation Capability: an Empirical Study of Taiwan's Knowledge-Intensive Industries," *J. Inf. Sci.*, vol. 33, no. 151, pp. 340–359, 2007.

[41] J. Wu and Z. Wu, "Key Supplier Relationships and Product Introduction Success: The Moderating Roles of Self-Enforcement and Interdependence between Buyer and Supplier," *Ind. Mark. Manag.*, vol. 46, pp. 183–192, 2015.

[42] I. Wu and M. Chiu, "Organizational Applications of IT Innovation and Firm's Competitive Performance: A Resource-Based View and the Innovation Diffusion Approach," *J. Eng. Technol. Manag.*, vol. 35, pp. 25–44, 2015.

[43] M. Alvesson, *Understanding Organizational Culture*, 2nd ed. London: SAGE Publications, Ltd., 2013.

[44] A. B. Chaudhry, "Knowledge Sharing Practices in Asian Institutions: A Multi-Cultural Perspective From Singapore," in *71th IFLA General Conference and Council*, 2005.

[45] K. M. Bartol and A. Srivastava, "Encouraging Knowledge Sharing: The Role of Organizational Reward Systems," *J. Leadersh. Organ. Stud.*, vol. 9, no. 1, pp. 64–76, 2002.

[46] R. M. Muller, M. Spiliopoulou, and H.-J. Lenz, "The Influence of Incentives and Culture on Knowledge Sharing," in *Proceedings of the 38th Annual Hawaii International Conference on System Sciences*, 2005, vol. 00, no. C, pp. 1–10.

[47] T. J. Chang, S. P. Yeh, and I.-J. Yeh, "The Effects of Joint Reward System in New Product Development," *Int. J. Manpow.*, vol. 28, no. 3/4, pp. 276–297, 2007.

[48] G. W. Bock and Y. G. Kim, "Breaking The Myths of Rewards: An Exploratory Study of Attitudes About Knowledge Sharing," *Inf. Resour. Manag. J.*, vol. 15, no. 2, pp. 14–21, 2002.

[49] W. Tsai, "Social Structure of 'Coopetition' Within a Multiunit Organization: Coordination, Competition, and Intra organizational Knowledge Sharing," *Organ. Sci.*, vol. 13, no. 2, pp. 179–190, 2002.

[50] K. Y. Wong and E. Aspinwall, "An Empirical Study of The Important Factors for Knowledge-Management Adoption in the SME Sector," *J. Knowl. Manag.*, vol. 9, no. 3, pp. 64–82, 2005.

[51] C. M. Jacobson, "Knowledge Sharing Between Individuals," in *Encyclopedia of Knowledge Management*, D. Schwartz, Ed. Idea Group Reference, 2011, pp. 507–513.

[52] B. Prasad, "Converting Computer-Integrated Manufacturing into an Intelligent Information System by Combining CIM with Concurrent Engineering and Knowledge Management," *Ind. Manag. Data Syst.*, vol. 100, no. 7, pp. 301–316, 2000.

[53] E. B. Roberts, "Benchmarking Global Strategic Management of Technology," *Res. Technol. Manag.*, vol. 44, no. 2, pp. 25–36, 2001.

[54] M. A. Schilling, *Strategic Management of Technological Innovation*, 4th ed. New York: McGraw-Hill Companies, Inc., 2013.

[55] M. Stefik *et al.*, "The Knowledge Sharing Challenge: The Sensemaking White Paper," 2002.

[56] B. Okwiet and J. K. Grabara, "Innovations' Influence on SME's Enterprises Activities," in *Procedia Economics and Finance*, 2013, vol. 6, no. 13, pp. 194–204.

[57] I. Matic and V. Jukic, "Innovativeness and Business Performances: Empirical Evidence from Bosnia and Herzegovina's Small-Sized Firms,"

J. Am. Acad. Bus., vol. 18, no. 1, pp. 198–205, 2012.

[58] C. Y. Lin and M. Y. Chen, "Does Innovation Lead to Performance? An Empirical Study of SMEs in Taiwan," *Manag. Res. News*, vol. 30, no. 2, pp. 115–132, 2007.

[59] A. Oke, G. Burke, and A. Myers, "Innovation Types and Performance in Growing UK SMEs," *Int. J. Oper. Prod. Manag.*, vol. 27, no. 7, pp. 735–753, 2007.

[60] G. Gaynor, *Innovation by Design: What it Takes to Keep Your Company On the Cutting Edge*, 1st ed. New York: AMACOM American Management Association, 2002.

[61] N. Rosenbusch, J. Brinckmann, and A. Bausch, "Is Innovation Always Beneficial? A Meta-analysis of the Relationship Between Innovation and Performance in SMEs," *J. Bus. Ventur.*, vol. 26, pp. 441–457, 2011.

[62] T. Lasalewo and A. F. Helmi, "Korelasi Inovasi dan Kinerja pada Industri Kecil dan Menengah: Kajian Meta-Analisis," *Bul. Psikol. Univ. Gadjah Mada Yogyakarta*, vol. 22, no. 1, pp. 45–62, 2014.

[63] B. Van Den Hooff and J. a. De Ridder, "Knowledge Sharing in Context: The Influence of Organizational Commitment, Communication Climate and CMC use on Knowledge Sharing," *J. Knowl. Manag.*, vol. 8, no. 6, pp. 117–130, 2004.

[64] B. van den Hooff and F. de L. van Weenen, "Committed to Share: Commitment and CMC Use as Antecedents of Knowledge Sharing," *Knowl. Process Manag.*, vol. 11, no. 1, pp. 13–24, 2004.

[65] J. S. Cook and L. Cook, "Promoting Organizational Knowledge Sharing," in *Innovations of Knowledge Management*, B. Montano, Ed. London: Idea Group Inc., 2004, pp. 300–321.

[66] T. Lasalewo, Subagyo, B. Hartono, and H. A. Yuniarto, "Communication Constraints and Motivations in the Context of Knowledge Sharing: A Systematic Literature Review," in *IEEE International Conference on Industrial Engineering and Engineering Management (IEEM)*, 2016, pp. 1804–1808.

[67] P. Hong, W. J. Doll, A. Y. Nahm, and X. Li, "Knowledge Sharing in Integrated Product Development," *Eur. J. Innov. Manag.*, vol. 7, no. 2, pp. 102–112, 2004.

[68] I. Nonaka and H. Takeuchi, *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*. Oxford university press, 1995.

[69] I. Nonaka and N. Konno, "The Concept of 'Ba': Bulding a Foundation for Knowledge Creation," *Calif. Manage. Rev.*, vol. 40, no. 3, pp. 40–54, 1998.

[70] G. Bock, W. Robert, and Y. Kim, "Behavioral Intention Formation in Knowledge Sharing: Examining the Roles of Extrinsic Motivators, Social-Psychological Forces, and Organizational Climate," *MIS Q.*, vol. 29, no. 1, pp. 87–111, 2005.

[71] L. Valenzuela-Fernandez, J. M. Merigo, and C. Nicolas, "The Most Influential Countries in Market Orientation: A Bibliometric Analysis Between 1990 and 2016," *Int. J. Eng. Bus. Manag.*, vol. 10, pp. 1–9, 2018.

[72] T. A. Chin, A. B. A. Hamid, A. Rasli, and H. H. Tat, "A Literature Analysis on the Relationship between External Integration, Environmental Uncertainty and Firm Performance in Malaysian SMEs," *Procedia - Soc. Behav. Sci.*, vol. 130, pp. 75–84, 2014.

[73] F. T. Rothaermel, *Strategic Management: Concepts and Cases*. New York: McGraw-Hill Irwin, 2012.

[74] G. Johansson, "Success factors for integration of ecodesign in product development: A review of state of the art," *Environ. Manag. Heal.*, vol. 13, no. 1, pp. 98–107, 2002.

[75] R. J. Calantone and C. A. Di Benedetto, "Clustering Product Launches by Price and Launch Strategy," *J. Bus. Ind. Mark.*, vol. 22, no. 1, pp. 4–19, 2007.

[76] M. Eisend, H. Evanschitzky, and R. J. Calantone, "The Relative Advantage of Marketing Over Technological Capabilities in Influencing New Product Performance: The Moderating Role of Country Institutions," *J. Int. Mark.*, vol. 24, no. 1, pp. 41–56, 2016.

[77] D. A. Griffith, T. Dean, and G. Yalcinkaya, "Building and Leveraging Competence Exploitation and Exploration for Firm New Product Success," *Ind. Mark. Manag.*, vol. 97, no. August, pp. 233–244, 2021.

[78] P. Gao, B. Yu, and W. Wu, "The Impact of Development Speed on New Product Success: A Meta-Analysis," *Appl. Mech. Mater.*, vol. 357–360, pp. 2574–2577, 2013.

[79] D. M. Szymanski, M. W. Kroff, and L. C. Troy, "Innovativeness and New Product Success: Insights from the Cumulative Evidence," *J. Acad. Mark. Sci.*, vol. 35, no. 1, pp. 35–52, 2007.

[80] P. R. Tomlinson and F. M. Fai, "The Nature of SME Co-operation and Innovation: A Multi-scalar and Multi-dimensional Analysis," *Int. J. Prod. Econ.*, vol. 141, pp. 316–326, 2013.

[81] H. Jalonen, "The Uncertainty of Innovation: a Systematic Review of the Literature," *J. Manag. Res.*, vol. 4, no. 1, pp. 1–47, 2012.

[82] E. K. R. E. Huizingh, "Open Innovation: State of the Art and Future Perspectives," *Technovation*, vol. 31, no. 1, pp. 2–9, 2011.

[83] G. Casimir, K. Lee, and M. Loon, "Knowledge Sharing: Influences of Trust, Commitment and Cost," *J. Knowl. Manag.*, vol. 16, no. 5, pp. 740–753, 2012.