



香港城市大學  
City University of Hong Kong

專業 創新 胸懷全球  
Professional · Creative  
For The World

## CityU Scholars

### An empirical study to explore the interplay of Managerial and Operational capabilities to infuse organizational innovation in SMEs

Ali, Zulfiqar; Zwetsloot, Inez Maria; Nada, Nader

**Published in:**

Procedia Computer Science

**Published:** 01/01/2019

**Document Version:**

Final Published version, also known as Publisher's PDF, Publisher's Final version or Version of Record

**License:**

CC BY-NC-ND

**Publication record in CityU Scholars:**

[Go to record](#)

**Published version (DOI):**

[10.1016/j.procs.2019.09.050](https://doi.org/10.1016/j.procs.2019.09.050)

**Publication details:**

Ali, Z., Zwetsloot, I. M., & Nada, N. (2019). An empirical study to explore the interplay of Managerial and Operational capabilities to infuse organizational innovation in SMEs. *Procedia Computer Science*, 158, 260-269. <https://doi.org/10.1016/j.procs.2019.09.050>

**Citing this paper**

Please note that where the full-text provided on CityU Scholars is the Post-print version (also known as Accepted Author Manuscript, Peer-reviewed or Author Final version), it may differ from the Final Published version. When citing, ensure that you check and use the publisher's definitive version for pagination and other details.

**General rights**

Copyright for the publications made accessible via the CityU Scholars portal is retained by the author(s) and/or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights. Users may not further distribute the material or use it for any profit-making activity or commercial gain.

**Publisher permission**

Permission for previously published items are in accordance with publisher's copyright policies sourced from the SHERPA RoMEO database. Links to full text versions (either Published or Post-print) are only available if corresponding publishers allow open access.

**Take down policy**

Contact [lbscholars@cityu.edu.hk](mailto:lbscholars@cityu.edu.hk) if you believe that this document breaches copyright and provide us with details. We will remove access to the work immediately and investigate your claim.



3rd World Conference on Technology, Innovation and Entrepreneurship (WOCTINE)

# An empirical study to explore the interplay of Managerial and Operational capabilities to infuse organizational innovation in SMEs

Zulfiqar Ali <sup>1,\*</sup>, Inez Maria Zwetsloot<sup>1</sup>, and Nader Nada <sup>2</sup>

<sup>1</sup>City University of Hong Kong

<sup>2</sup>Ainovia, Helsinki, Finland

---

## Abstract

This study aims to explore and examine the relationship of managerial capability and operational capability to infuse organizational innovation in small and medium-sized enterprises by proposing and empirically validating a rigorous capability-based model. This study conceptualized managerial capability by considering decision making, management style, and people development whereas operational capability is conceptualized by considering process management and performance management under the umbrella of Resource-based view theory, dynamic capability and organizational capability perspective. Partial least squares structural equation modelling (PLS-SEM) is employed to test the model hypotheses and importance-performance map analysis (IPMA) provides information about the significance and relevance of the key dimensions of managerial and operational capability which explain and help to infuse organizational innovation. The empirical data is gathered through questionnaires distributed across 210 SMEs. The results exhibit strong and significant relationships among managerial capability, operational capability and organizational innovation where majority of the hypothesis are supported by the empirical results. The results are practical in nature as they may help SMEs to gain a holistic view of the relationship between managerial and operational capability and their influence on organizational innovation.

© 2019 The Authors. Published by Elsevier B.V.

Peer-review under responsibility of the scientific committee of the 3rd World Conference on Technology, Innovation and Entrepreneurship

*Keywords:* Managerial capability; operational capability; organizational innovation; SMEs; PLS-SEM

---

\* Corresponding author. Tel.: +852 5719 2384

E-mail address: [zulfiqali3@cityu.edu.hk](mailto:zulfiqali3@cityu.edu.hk)

## 1. Introduction

Small and medium-sized enterprises (SMEs) are inevitable for economic growth and sustainability. Nowadays SMEs are exposed to severe competition due to globalization and digitalization. This global competition phenomenon is a big challenge for SMEs to sustain competitive advantage and performance. Sustainable business performance is portrayed by a healthy process and performance management practices [1]. The key to successful improvement of

business performance and competitiveness lies in the effective adoption of key managerial practices which leads to organizational innovation. Moreover, the literature revealed that SMEs engulf with difficulties while adopting novel and innovative managerial practices. Therefore, there is a clear need to stimulate the development of the managerial capability to develop operational capability in order to infuse organizational innovation in SMEs. The firm's competitiveness and success has been associated with the capability to innovate [2]. Thus SMEs needs to focus on the development of key organizational capabilities in order to innovate not occasionally but with a constant rate to sustain competitive advantage and performance. Innovation is considered as an evolutionary process within an organization to adopt any change related to system, process, policy or service which is new and can create value for the organization. Therefore, innovation can be considered as an organizational capability, as it configures and reconfigures organizational resources to create value [3].

The development and sustainability of an improved innovation capability should be the key focus area of the top managers of SMEs [4]. SMEs could benefit from performance measurement when improving their innovation capability. Performance measurement is today seen as a comprehensive process, which means that all things happening in the organisation are considered to have an impact on the performance of the organisation. These things include leadership and management, employees' development, decision making. Successfully adopting new methods for process management [5] and performance management [6] is very essential for competitive advantage.

The existing knowledge with respect to process and performance management in SMEs limited to the study of SMEs from a more traditional performance measurement perspectives [7]. Prior studies have shown that innovation capability can be facilitated through performance measurement [8]. Other studies focused on process measurement and their relationship with firm's performance [9]. Moreover, the majority of the authors have neglected the keys aspects of process management and performance management, while none of the studies offer a comprehensive view of process and performance management on organizational innovation in SMEs. There have been few attempts of using a performance measurement approach to generate framework for development of innovation capability within SMEs [8, 10, 11].

The purpose of this paper is to propose and empirically validate a comprehensive capability-based model in order to investigate and explore the relationship between key organizational capabilities, namely managerial and operational capability and their associated dimensions which are vital for SMEs to infuse organizational innovation. Specifically, the objectives are to examine and explore the relationship between: first, management capability (by considering management style, decision making and people development) and operational capability (by considering process management and performance management); second, operational capability and organizational innovation; and third, managerial capability and organizational innovation.

## **2. Theoretical model and hypotheses**

The conceptual model is based on the theoretical foundations of the resource-based view (RBV), the dynamic capability and organizational capability perspectives. RBV gives firm level picture in terms of resources but can't identify the particular resources to achieve competitive advantage. Dynamic capability point of view conquers that downside by characterizing the firm as a sole collection of aggregated tangible and intangible resource stocks [12] which can be converted to capabilities. Organizational capabilities equip firm with a comprehensive and holistic process which enable it to capitalize on the internal and external sources by configuring its resources [13]. This study approached managerial and operational capabilities as a subset of the organizational capabilities.

### *2.1. Managerial capabilities*

Managerial capabilities are defined as the management's abilities to assimilate and reconfigure organizational resources and competencies. Managerial capability is conceptualized through three dimensions: management style, decision-making, and people development [14, 15]. Management style influence and motivate subordinates to achieve organizational goals [16]. It is about building consensus and teamwork, not a command and control approach. A positive management style motivates employees to look beyond their own interests and think outside of the box in regards to their routine tasks [17]. Decision-making refers to the process of making a decision in line with business

strategy and vision. All the stakeholders should be involved in the decision-making process to make it more collaborative and effective. Kunc and Morecroft [18] highlighted managerial decision-making processes under a resource-based paradigm, and the relationship of decision-making to resource building and organizational innovation. People development is about creating a knowledge-friendly space where an employee from all levels can seek and nurture their knowledge [19]. RBV highlighted the importance of human development and other key organizational resources to gain competitive advantage by efficiently leveraging them [20].

## 2.2. Operational capabilities

This study defined operational capabilities based on the literature while applying them in the context of operations management. Operational capability is the firm's ability to streamline its key technologies, resources and pivotal processes and to address customers' requirements efficiently and cost-effectively [21]. Operational capabilities evolve over time, engulfed by firm's unique features which makes them distinctive and creates a barrier to imitation, a source of competitive advantage [11]. Operational capabilities are a source of unity, integration and they also provide directions to the existing resources and other operational practices [21]. In this work, operational capability is conceptualized by two dimensions, process management and performance management. Process management is associated with the alignment, redefining and implementation of key processes [22]. Efficient process management helps to attain a competitive advantage by providing reliable products and services at low cost, higher speed with minimal usage of key resources, even in turbulent business environments [23]. Agile and resilient SMEs pay utmost attention to their keys processes which facilitate them in rapid adoption to the ever-changing business environment [11]. Performance management is an ongoing and constant practice of defining, setting and readjusting objectives and goals which are strategically aligned to achieve and sustain efficient performance [24]. The foundation of performance management is the performance targets or key performance indicators (KPIs) which can translate business strategies into operational terms [25]. Performance targets or KPIs should be revised continuously based on the required performance, clarity and relevance. The new and revised KPIs should be communicated throughout the organization.

## 2.3. Organizational innovation

Innovation is one of the fundamental instruments of growth strategies to enter new markets, to increase the existing market share and to provide the company with a competitive edge. O'Sullivan and Dooley [26] defined "Innovation is the process of making changes, large and small, radical and incremental, to products, processes and services that result in the introduction of something new for the organization that adds value to customers and contributes to the knowledge store of the organization". In this study, organizational innovation represents a holistic process of innovation which involves generating, selecting, developing and implementing ideas [27]. It is the "ability of a firm to introduce new process, product or idea in the organization that leads to strategic outcomes which are beyond mere innovation [28]. Organizational Innovation is a system-wide approach that examines innovation at the firm and strategic level [15].

## 2.4. Managerial capability and operational capability

Firms can achieve and sustain competitive advantage only when its operational capability is efficiently managed, updated with comparison to competition and market trends. Management style motivates employees to learn and excel the organizational processes, also it is management responsibility to help an organization to update PKI [11] for key process to sustain the competitive advantage [29]. The collaborative decision making is inevitable to review and improve processes and performance indicators with all the associated stakeholders [30]. Also, the people development is positively linked with the efficiency of processes and helps to achieve higher level of performance on individual and business level [19]. Thus, it has been hypothesized:

*H1: Managerial capability has positive relationship with operational capability. Specifically*

*H1a: Management style is positively linked with process management and performance management of operational capability*

*H1b: Decision making is positively linked with process management and performance management of operational capability*

*H1c: People development is positively linked with process management and performance management of operational capability*

## 2.5. Operational capability and organizational innovation

The operational innovation is related to the implementation of new methods for organizing routines and procedures, such as the introduction of practice, improving KPIs, or introducing management systems. Literature unveiled many studies which established the positive relationship between organizational capabilities and innovation [9, 31]. Operational innovation which builds upon existing organizational capabilities is unlikely to lead to innovation that significantly gives competitive advantage [32]. Operational innovation is linked with adaptability of process management which focuses on employee's skills and knowledge to do the processes, process should be measured and improved on a regular basis [31]. Also, performance management has a positive link with innovation [8]. Performance management is to set clear targets for the key processes, continuous improvement of KPIs after evaluation and relevance with business goals and strategy [1]. Based on the above literature discussed, we have hypotheses that operational capability is positively linked to organizational innovation

*H2: Operational capability has positive relationship with Organizational innovation. Specifically*

*H2a: Process management is positively linked with organizational innovation*

*H2b: Performance management is positively linked with organizational innovation*

## 2.6. Managerial capability and organizational innovation

Organizational innovation is a holistic and complex process, especially in SMEs as the hierarchy and other business dynamics are different from a large organization. The managerial capability comes it to play for organizational innovation, as management style plays a vital role to motivate and encourage employees to think out of the box and to stimulate creativity on all level [33]. Many prior studies investigated the role of management style and innovation while considering different variables like product innovation [4], process innovation [2]. Also, some researcher investigated the relationship between human development and innovation [34]. Decision making is also key determinant of organizational innovation if it is done with proper information scanning and external relationship [35]. Participatory decision making accelerates the decision-making process and imparts ownership sense in involved employees. Zehir and Özşahin [30] argue the decision making is positively related to innovation performance. People development is also linked with innovation and many studies found positive relationship between these variables [36]. Based on the above, the following hypothesis is formulated:

*H3: Managerial capability has positive relationship with Organizational innovation. Specifically*

*H3a: Management style is positively linked with organizational innovation*

*H3b: Decision making is positively linked with organizational innovation*

*H3c: People development is positively linked with organizational innovation*

## 3. Research methods and techniques

### 3.1 Research instrument

A questionnaire was developed based on the literature given in Table 1. The questionnaire consists of seven parts including the six variables and one section for company and respondent profile. The measurement items were adopted from existing studies wherever found appropriate. For new measurement items, established and proven procedures were used to develop the scale [37]. The validity of the questionnaire was preserved by following Mowen and Voss [38]. A pre-test was carried out and appropriate changes were incorporated after consulting key academic personnel. A pilot study was administered to assess the content validity and other unpredictable problems related to fieldwork. Finally, after making some minor corrections, it was confirmed that all items were understandable, and respondents

filled out the questionnaires successfully. Managerial capability was assessed by using six items of measure management style, five items of measure decision making and, eight items of measure people development. Operational capability was assessed by using four items to measure process management and six items to measure performance management. Finally, organization innovation was measured by using ten items. Since the respondents were fluent in the English language and the past research has effectively employed English language questionnaires in Pakistan [39], the questionnaires are not translated in Urdu. Five-point Likert-type scale (ranging from 1= No to 5 = Yes) was used for every construct.

3.2 Data collection, analysis and sample

The research is classified as quantitative by the approach, descriptive and causal which involved hypotheses and theories testing of the causal relationship between predictors and criterion variables [40]. The study focused on SMEs from Pakistan and an online survey was designed to collect the data. The survey was designed to get information about the firm’s innovation process and how the innovation process is being managed, also managerial and operational capabilities. Particular region part of Pakistan (Sialkot and Lahore district) was focused on to get the insight of SMEs. At the completion of the data collection phase, 210 valid responses were received with a response rate of 26.2%. The sample size consists of Small and medium-sized enterprises 98% which represents textile/garment 18%, precision engineering 13 %, sports goods 12%, chemical and cosmetics 12% and leather goods 10%. Majority of the respondents were from the senior management or of CEO level. This study employs a multivariate analysis technique, i.e., a PLS-SEM tool or more specifically, SmartPLS 3 is used to estimate the research model.

4. Findings and results

4.1 Measurement model

First, the measurement model is assessed to test convergent validity. This was examined by factor loading (FL), composite reliability (CR) and Average Variance Extracted (AVE). Table 1 shows that all item loadings are found to be above 0.70 or 0.50 and are significant at the 0.001. Measures of construct reliability include Cronbach’s alpha and composite reliability as recommended by Chin [41]. Table 1 shows that all values of Cronbach’s alpha and composite reliability are greater than or equal to 0.70, suggesting acceptable construct reliability. Convergent validity (CV) is assessed by examining the average variance extracted (AVE), which provides the sum of variance that a construct gains from its items in relation to the amount of the variance due to the measurement error [42]. All the AVE values are greater than 0.50 at the construct level. Hence, the measurement model’s convergent validity is acceptable. Discriminant validity which represents the extent to which measures of a given construct differ from measures of other constructs in the same model [43] is examined by three approaches i.e., (1) Fornell-Larcker criterion, (2) cross loading and (3) Heterotrait–Monotrait (HTMT) ratio. Based on results shown in Table 2, Fornell-Larcker criterion was examined by comparing the square root of the average variance extracted (AVE) with the correlations between the focal construct and all other constructs. The square roots of each AVE are higher than the correlations between the other latent variables. The cross-loadings of each item’s outer loading on the related construct are greater as compared to all of its loadings on other constructs (i.e., the cross-loadings) [44]. Finally, the results of the HTMT ratio confirm that none of the HTMT criteria is greater than 0.85 or 0.90 [45]. The above results established the discriminant validity for the proposed model.

Table 1. Measurement model

Constructs	Items	F.L	$\alpha$	C.R	AVE	Sources
Management Style	Open communication and feedback	0.75	0.76	0.83	0.51	[46-48]
	Employees can talk to their managers	0.61				
	Opportunity to try new ways of doing things	0.62				

	Given responsibility/ownership to deliver goals	0.67				
	Employees know their role and contribute	0.67				
	Managers praise all employees for their work	0.69				
Decision Making	Managers delegate decision making power to employees	0.78	0.75	0.83	0.52	
	Everyone involved in decision making	0.69				
	Employee's feedback is taken into account	0.71				[18, 49]
	Management is not a bottleneck in decision making	0.71				
	Decisions made with the vision of the business in mind.	0.65				
People Development	Employees have been adequately trained	0.72	0.83	0.87	0.53	
	Employees are assessed for training or development	0.71				
	Employees can suggest training or development	0.63				
	Availability of budget for training and development	0.64				
	Managers discuss career development with all employees	0.63				[20, 50-52]
	Employees are trained to become multi-skilled	0.69				
	Employees have regular staff appraisals	0.67				
	There is a formal appraisal process for all staff.	0.68				
Process management	You understand each activity/task in the process	0.80	0.81	0.87	0.64	
	Employees understand each activity/task in the process	0.74				
	All the key processes are measured regularly	0.81				[11, 31, 53]
	All the processes are continuously improved	0.84				
Performance management	Business set very clear target measures for each process.	0.74	0.85	0.89	0.57	
	KPIs are used to continuously improve the business.	0.77				
	Business knows the best performance levels for each KPIs.	0.74				
	KPIs are reviewed for their relevance and appropriateness	0.75				[11, 31, 54]
	Everyone is fully aware and knows what the KPIs are.	0.76				
	KPIs results are communicated to everyone regularly.	0.77				
Organizational innovation	Employees always look for new ways of doing things	0.76	0.87	0.89	0.56	
	Management is open to grab if new an opportunity arises	0.73				
	Management is ready to enter new markets	0.48				
	External information is used to initiate new product/service.	0.67				
	Management invest in new technology/product development.	0.50				
	Employees are rewarded for coming up with ideas.	0.74				[55-59]
	Ideas are evaluated for their relevance/benefit	0.64				
	Useful idea is taken to the development stage	0.72				
	Employee who suggested idea is involved in evaluation.	0.73				
	Employee who suggested idea is involved in development.	0.74				

Note: F.L = Factor loadings;  $\alpha$  = Cronbach's Alpha; C.R = Composite reliability; AVE = Average variance extracted; KPIs= Key Performance Indicators

Table 2. Construct reliability, convergent validity, discriminant validity (Fornell-Lacker and HTMT criterion).

	Mean	S.D	1	2	3	4	5	6
1.Management Style	3.08	1.08	<b>0.71</b>	0.48	0.76	0.55	0.55	0.47
2.Decision Making	3.06	0.89	0.37**	<b>0.72</b>	0.56	0.51	0.43	0.63
3.People Development	2.96	0.88	0.62**	0.44**	<b>0.73</b>	0.50	0.49	0.51
4.Process management	3.14	1.01	0.45**	0.40**	0.44**	<b>0.80</b>	0.53	0.55
5.Performance management	3.12	0.91	0.45**	0.35**	0.43**	0.45**	<b>0.76</b>	0.42
6.Organizational Innovation	3.09	0.89	0.38**	0.52**	0.45**	0.47**	0.38**	<b>0.75</b>

Note: S.D = Standard deviation; Bold values on the diagonal are the square roots of the AVE (average variance extracted) and represent Fornell-Lacker's criteria. Values below the diagonal are the correlations between the constructs; \*\*. Correlation is significant at the 0.01 level. Values above the diagonal are the HTMT values

#### 4.2 Structural model

This study draws the results of the structural model on Hair et al. [44] by looking at the  $R^2$ , beta, and corresponding t-values via bootstrapping. Variance inflation factor (VIF) is accessed and it is found that the collinearity among the predictor constructs is not an issue in the structural model, as all VIF values are below the threshold of 5. Next, we looked at the relationships between the variables by examining beta values ( $\beta$ ) of path coefficients and t-values [41, 44]. All the hypotheses were supported except H3a and H3c. Table 3 shows the results. Moreover, process management explains 37% of variance in organizational innovation ( $R^2 = 0.37$ ), performance management explain 32% of variance in organizational innovation ( $R^2 = 0.32$ ). The  $R^2$  values of 0.27 and 0.25 are quite acceptable and indicate a substantial

model [60]. Next, this study assesses the relative predictive relevance of the structural model by using the Stone-Geisser-Criterion ( $Q^2$ ), derived through the blindfolding technique in PLS-SEM with an omission distance of 8. All  $Q^2$  values are considerably greater than zero, which provide support for the model's predictive relevance concerning the reflective endogenous latent variables. Model validation is done by standardized root means square residual (SRMR). Analysis produces a value of 0.07 for SRMR which established the model validation [61]. This study employs an Importance Performance Matrix Analysis (IPMA) [62, 63]. Performing an IPMA requires to determine a target key construct, which is organizational innovation in this study. Results of IPMA show reveal that decision making, people development and process management are the top three most important variables for establishing and achieving organizational innovation.

Table 3: Significant testing results of the structural model path coefficients

Structural path	Path coefficient	t-Values	p-value	Conclusion
H1a Management style → Process Management	0.25	2.76**	0.00	Supported
Management style → Performance Management	0.28	3.00**	0.00	
H1b Decision making → Process Management	0.23	3.41***	0.00	Supported
Decision making → Performance Management	0.17	2.38**	0.01	
H1c People development → Process Management	0.18	2.33**	0.01	Supported
People development → Performance Management	0.18	1.98*	0.03	
H2a Process management → Organizational innovation	0.21	2.93**	0.00	Supported
H2b Performance management → Organizational innovation	0.20	2.50**	0.16	Supported
H3a Management style → Organizational innovation	0.03	0.29	0.39	Not supported
H3b Decision making → Organizational innovation	0.32	4.33***	0.00	Supported
H3c People development → Organizational innovation	0.16	1.55	0.05	Not supported
$R^2$ Process Management = 0.37		$Q^2$ Process Management = 0.17		SRMR composite model = 0.07
$R^2$ Performance management = 0.32		$Q^2$ Performance management = 0.13		
$R^2$ Organizational Innovation = 0.47		$Q^2$ Organizational Innovation = 0.16		

Note: <sup>ns</sup> = Not significant (based on  $t$  (4999), one-tailed test); Sig. = Significance; \*  $|t| \geq 1.65$  at  $p$  .05 level; \*\*  $|t| \geq 2.33$  at  $p$  .01 level; \*\*\*  $|t| \geq 3.09$  at  $p$  .001 level. SRMR = Standardized root mean square residual.  $R^2$  = Determination coefficients;  $Q^2$  = Predictive relevance of endogenous (omission distance = 8). Threshold for  $R^2$  value  $\geq 0.25$  (weak);  $\geq 0.50$  (moderate);  $\geq 0.75$  (substantial). Threshold for  $Q^2$  value  $> 0$  indicates predictive relevance.

## 5. Discussion

The prime objective of this study is to examine and explore the relationship between managerial and operational capability on organizational innovation in SMEs. We conceptualized management capability by considering management style, decision making and people development and operational capability by considering process management and performance. The results generated by PLS-SEM exhibits novel insights which are very useful for SMEs to infuse innovation by developing managerial and operational capabilities. The study is backed by the support of all the hypothesized relationships except two paths. Our findings provide insights into capability development of SMEs by highlighting the significant relationships which can help SMEs to infuse organizational innovation. The findings highlighted the positive and significant relationship between managerial capability and operational capability which is an original and novel contribution in the context of SMEs. These findings are also in line with prior literature [64]. Overall managerial capability development is key for the development of operational effectiveness and efficiency in SMEs.

Process management is positively linked with organizational innovation. SMEs need to understand and update their existing processes on a regular basis in the light of new technology, methodology, also all the process should be aligned with business strategy [31, 65]. The relationship between performance management and organizational innovation is also significant. Performance measurement and management is integral part of management which can help and pave way to achieve sustainable competitive advantage. The importance-performance matrix analysis (IPMA) also revealed that process management plays a key role in fostering innovation in SMEs. The process should be improved on continuous manner based on the updated information and knowledge provided by the adaptive capability. The relationship between managerial capability and organizational innovation is not significant overall except decision making as H3b is supported. The non-significant paths don't mean that these dimensions are not



important. The study was carried out in a developing country's SMEs, which were expected to show some peculiar behaviour and finding as compared with studies carried out in developed countries.

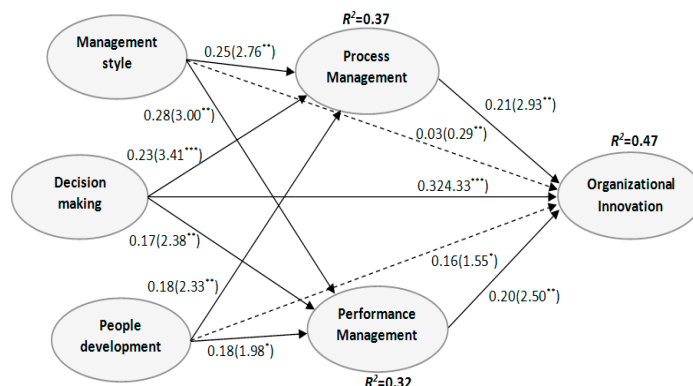


Figure 1. Model estimation results (with significant and non-significant paths)

This study makes three contributions to the innovation management literature in terms of capability development in SMEs. First, by conceptualizing process management and performance management as operational capability, also horizon scanning, change management and resilience as adaptive capability in the light RBV, dynamic and organizational capability perspective. Second, the study provides empirical evidence of the link between operational and adaptive capabilities. Third, application of PLS-SEM in innovation management study which allowed us to explore and explain the interlinked relationship among capabilities and their related variables. The study extends the application of IPMA to graphical present each construct's importance for the target construct (i.e. Organizational Innovation) which will help management to identify the weak and strong areas for further actions. This study no doubt has some implications for the SMEs' managers who wish to foster organizational innovation and transformation process in their organizations. Once managers realize the importance of capability development, they should actively focus on operational capability as they are recognized as the backbone of SMEs. Management should train the employees regarding process management and make it sure that all the employee know the key processes very well. Each task and activity in the key process should be communicated to all the stakeholders. The key processes should be displayed in relevant places so that the employee knows the sequence and importance of each activity in the process.

## 6. Conclusion

The empirical results showed that managerial capability has a strong relationship with operational capability which then both have a mild relationship with organizational innovation in the context of SMEs. This study conceptualized two key constructs of organizational capabilities (managerial and operational capability) by proposing an integrated capability development model. The results found that the managerial and operational capability significantly contributed to organizational innovation in SMEs. The limitations includes, biasness in data as subjective measures based on the perceptions of companies' managers and employees. The study is based on data from a single country. The specific country characteristics should be taken into account when the results are applied. Further research could also explore the relationship of strategic capability, operational capability and the non-significant paths.

## References

- [1] Saunila, M., S. Pekkola, and J. Ukko, *The relationship between innovation capability and performance*. International Journal of Productivity and Performance Management, 2014. **63**(2): p. 234-249.
- [2] Tidd, J. and J. Bessant, *Managing Innovation: Integrating Technological, Market and Organizational Change*. 5 ed. 2013, Chichester, England: John Wiley & Sons.

- [3] Giniuniene, J. and L. Jurksiene, *Dynamic Capabilities, Innovation and Organizational Learning: Interrelations and Impact on Firm Performance*. 20th International Scientific Conference - Economics and Management 2015 (Icem-2015), 2015. **213**: p. 985-991.
- [4] Ruiz-Jimenez, J.M. and M.D. Fuentes-Fuentes, *Management capabilities, innovation, and gender diversity in the top management team: An empirical analysis in technology-based SMEs*. Brq-Business Research Quarterly, 2016. **19**(2): p. 107-121.
- [5] Hastuti, D., J. Dalle, and H. Khatimi. *An empirical evaluation of ERP values using RBV approach in Indonesia*. in *Proceeding - 2016 2nd International Conference on Science in Information Technology, ICSITech 2016: Information Science for Green Society and Environment*. 2016.
- [6] Ates, A., et al., *The development of SME managerial practice for effective performance management*. Journal of Small Business and Enterprise Development, 2013. **20**(1): p. 28-54.
- [7] Bititci, U.S., et al., *Managerial processes: an operations management perspective towards dynamic capabilities*. Production Planning & Control, 2011. **22**(2): p. 157-173.
- [8] Saunila, M., *Performance measurement approach for innovation capability in SMEs*. International Journal of Productivity and Performance Management, 2016. **65**(2): p. 162-176.
- [9] Mbizi, R., et al., *Innovation in SMEs: A review of its role to organisational performance and SMEs operations sustainability*. Interdisciplinary Journal of Contemporary Research In Business, 2013. **4**(11): p. 370-389.
- [10] Saunila, M. and J. Ukko, *Facilitating innovation capability through performance measurement*. Management Research Review, 2013. **36**(10): p. 991-1010.
- [11] Takahashi, A.R.W., S. Bulgacov, and M.M. Giacomini, *Dynamic capabilities, operational capabilities (educational-marketing) and performance*. Review of business Management, 2017. **19**(65): p. 375-393.
- [12] Barney, J., *Firm Resources and Sustained Competitive Advantage*. Journal of Management, 1991. **17**(1): p. 99-120.
- [13] Lopez-Cabrales, M.A., S. Gottling-Oliveira-Monteiro, and P. Vazquez-Rodriguez, *Organizational Capabilities and Profitability: The Mediating Role of Business Strategy*. Sage Open, 2015. **5**(4): p. 2158244015616852.
- [14] Nada, N. and Z. Ali, *Integrated Interoperability Capability Model for Adaptive and Sustainable SMEs*, in *Enterprise Interoperability VI: Interoperability for Agility, Resilience and Plasticity of Collaborations*, K. Mertins, et al., Editors. 2014, Springer International Publishing: Cham. p. 501-511.
- [15] Ali, Z., H. Sun, and M. Ali, *The Impact of Managerial and Adaptive Capabilities to Stimulate Organizational Innovation in SMEs: A Complementary PLS-SEM Approach*. Sustainability, 2017. **9**(12): p. 2157.
- [16] Franco, M. and P.G. Matos, *Leadership styles in SMEs: A mixed-method approach*. International Entrepreneurship and Management Journal, 2015. **11**(2): p. 425-451.
- [17] Lopez-Cabrales, A., M. Borney-Barrachina, and M. Diaz-Fernandez, *Leadership and dynamic capabilities: the role of HR systems*. Personnel Review, 2017. **46**(2): p. 255-276.
- [18] Kunc, M.H. and J.D.W. Morecroft, *MANAGERIAL DECISION MAKING AND FIRM PERFORMANCE UNDER A RESOURCE-BASED PARADIGM*. Strategic Management Journal, 2010. **31**(11): p. 1164-1182.
- [19] Nolan, C.T. and T.N. Garavan, *Human Resource Development in SMEs: A Systematic Review of the Literature*. International Journal of Management Reviews, 2016. **18**(1): p. 85-107.
- [20] Wright, P.M., B.B. Dunford, and S.A. Snell, *Human resources and the resource based view of the firm*. Journal of Management, 2001. **27**(6): p. 701-721.
- [21] Ferasso, M., A.R.W. Takahashi, and M.R. May. *Dynamic capabilities, Operational capabilities and SMEs Performance: A Synthesis of Researches*. in *International Association for Management of Technology*. 2017. Vienna, Austria.
- [22] Golann, B., *Achieving growth and responsiveness: Process management and market orientation in small firms*. Journal of Small Business Management, 2006. **44**(3): p. 369-385.
- [23] Hervás-Oliver, J.L., C. Boronat-Moll, and F. Sempere-Ripoll, *On Process Innovation Capabilities in SMEs: A Taxonomy of Process-Oriented Innovative SMEs*. Journal of Small Business Management, 2016. **54**(S1): p. 113-134.
- [24] Lämsiluoto, A., et al., *Market Orientation and Performance Measurement System Adoption Impact on Performance in SMEs*. Journal of Small Business Management, 2018. **0**(0).
- [25] Garengo, P. and M.K. Sharma, *Performance measurement system contingency factors: a cross analysis of Italian and Indian SMEs*. Production Planning & Control, 2014. **25**(3): p. 220-240.
- [26] O'Sullivan, D. and L. Dooley, *Applying Innovation*. 2009: Thousand Oaks, California.
- [27] Park, K., M. Ali, and F. Chevalier, *A spiral process model of technological innovation in a developing country: The case of Samsung African*. Journal of Business Management 2011. **5**(13): p. 5162-5178.
- [28] Simpson, P.M., J.A. Siguaw, and C.A. Enz, *Innovation orientation outcomes: The good and the bad*. Journal of Business Research, 2006. **59**(10-11): p. 1133-1141.
- [29] Noruzy, A., et al., *Relations between transformational leadership, organizational learning, knowledge management, organizational innovation, and organizational performance: an empirical investigation of manufacturing firms*. The International Journal of Advanced Manufacturing Technology, 2013. **64**(5): p. 1073-1085.
- [30] Zehir, C. and M. Özşahin, *A field research on the relationship between strategic decision - making speed and innovation performance in the case of Turkish large - scale firms*. Management Decision, 2008. **46**(5): p. 709-724.
- [31] Ju, K.J., B. Park, and T. Kim, *Causal Relationship between Supply Chain Dynamic Capabilities, Technological Innovation, and Operational Performance*. Management and Production Engineering Review, 2016. **7**(4): p. 6-15.
- [32] Paliokaitė, A., *The Relationship between Organisational Foresight and Product Innovation in Small and Medium Enterprises*, in *8th International Ph.D. School on National Systems of Innovation and Economic Development, Globelics Academy, 20-31 August*. 2012: Rio de Janeiro- Brazil.
- [33] Sethibe, T. and R. Steyn, *The relationship between leadership styles, innovation and organisational performance: A systematic review*. South African Journal of Economic and Management Sciences, 2015. **18**: p. 325-337.
- [34] Della Torre, E. and L. Solari, *High-performance work systems and the change management process in medium-sized firms*. The International

- Journal of Human Resource Management, 2013. **24**(13): p. 2583.
- [35] Gupta, H. and M.K. Barua, *Identifying enablers of technological innovation for Indian MSMEs using best–worst multi criteria decision making method*. Technological Forecasting and Social Change, 2016. **107**: p. 69-79.
- [36] Brien, E.O. and I. Hamburg, *Supporting Sustainable Strategies for SMEs through Training, Cooperation and Mentoring*. Higher Education Studies, 2014. **4**(2): p. 61-69.
- [37] Jarvis, C.B., S.B. MacKenzie, and P.M. Podsakoff, *A critical review of construct indicators and measurement model misspecification in marketing and consumer research*. Journal of Consumer Research, 2003. **30**(2): p. 199-218.
- [38] Mowen, J.C. and K.E. Voss, *On building better construct measures: Implications of a general hierarchical model*. Psychology and Marketing, 2008. **25**(6): p. 485-505.
- [39] Raja, U. and G. Johns, *The joint effects of personality and job scope on in-role performance, citizenship behaviors, and creativity*. Human Relations, 2010. **63**(7): p. 981-1005.
- [40] Sekaran, U. and R. Bougie, *Research Methods for Business: A Skill-Building Approach*. 6th ed. 2013, West Sussex, UK: John Wiley and Sons Ltd.
- [41] Chin, W.W., *Issues and Opinion on Structural Equation Modeling*. MIS Quarterly, 1998. **22**(1): p. 7-16.
- [42] Fornell, C. and D.F. Larcker, *Structural Equation Models with Unobservable Variables and Measurement Error: Algebra and Statistics*. Journal of Marketing Research, 1981. **18**(3): p. 382-388.
- [43] Hulland, J., *Use of partial least squares (PLS) in strategic management research: A review of four recent studies*. Strategic Management Journal, 1999. **20**(2): p. 195-204.
- [44] Joseph F. Hair, J., et al., *A primer on partial least squares structural equation modeling (PLS-SEM)*. 2nd ed. 2017, Thousand Oaks, CA: SAGE Publications, Inc. 384
- [45] Henseler, J., C.M. Ringle, and M. Sarstedt, *A new criterion for assessing discriminant validity in variance-based structural equation modeling*. Journal of the Academy of Marketing Science, 2015. **43**(1): p. 115-135.
- [46] García-Morales, V.J., F.J. Lloréns-Montes, and A.J. Verdú-Jover, *The Effects of Transformational Leadership on Organizational Performance through Knowledge and Innovation\**. British Journal of Management, 2008. **19**(4): p. 299-319.
- [47] Matzler, K., et al., *The Relationship between Transformational Leadership, Product Innovation and Performance in SMEs*. Journal of Small Business & Entrepreneurship, 2008. **21**(2): p. 139-151.
- [48] Overstreet, R.E., et al., *Leadership style and organizational innovativeness drive motor carriers toward sustained performance*. The International Journal of Logistics Management, 2013. **24**(2): p. 247-270.
- [49] O'Regan, N., M. Sims, and A. Ghobadian, *High performance: Ownership and decision-making in SMEs*. Management Decision, 2005. **43**(3): p. 382-396.
- [50] Loan-Clarke, J., et al., *Competence-based management development in small and medium-sized enterprises: a multi-stakeholder analysis*. International Journal of Training & Development, 2000. **4**(3): p. 176.
- [51] Bryan, J., *Training and Performance in Small Firms*. International Small Business Journal, 2006. **24**(6): p. 635-660.
- [52] Jayawarna, D., A. Macpherson, and A. Wilson, *Training commitment and performance in manufacturing SMEs: Incidence, intensity and approaches*. Journal of Small Business and Enterprise Development, 2007. **14**(2): p. 321-338.
- [53] Jinhui, W.S., M.S. A., and F.B. B., *Operational Capabilities: The Secret Ingredient*. Decision Sciences, 2010. **41**(4): p. 721-754.
- [54] Vathsala, W., *Performance Management in Medium-Sized Enterprises*. Performance Improvement Quarterly, 2016. **29**(3): p. 307-331.
- [55] Guan, J. and N. Ma, *Innovative capability and export performance of Chinese firms*. Technovation, 2003. **23**(9): p. 737-747.
- [56] Lawson, B. and D. Samson, *Developing Innovation Capability in Organisations: A Dynamic Capabilities Approach*. International Journal of Innovation Management, 2001. **5**(3): p. 377.
- [57] Camisón, C. and A. Villar-López, *Non-technical innovation: Organizational memory and learning capabilities as antecedent factors with effects on sustained competitive advantage*. Industrial Marketing Management, 2011. **40**(8): p. 1294-1304.
- [58] Laforet, S., *A framework of organisational innovation and outcomes in SMEs*. International Journal of Entrepreneurial Behavior & Research, 2011. **17**(4): p. 380-408.
- [59] Dadfar, H., et al., *Linkage between organisational innovation capability, product platform development and performance: The case of pharmaceutical small and medium enterprises in Iran*. Total Quality Management & Business Excellence, 2013. **24**(7-8): p. 819-834.
- [60] Cohen, J., *Statistical Power Analysis*. Current Directions in Psychological Science, 1992. **1**(3): p. 98-101.
- [61] Henseler, J., et al., *Common Beliefs and Reality About PLS*. Organizational Research Methods, 2014. **17**(2): p. 182-209.
- [62] Ringle, C.M. and M. Sarstedt, *Gain more insight from your PLS-SEM results The importance-performance map analysis*. Industrial Management & Data Systems, 2016. **116**(9): p. 1865-1886.
- [63] Schloderer, M.P., M. Sarstedt, and C.M. Ringle, *The relevance of reputation in the nonprofit sector: the moderating effect of socio-demographic characteristics*. International Journal of Nonprofit and Voluntary Sector Marketing, 2014. **19**(2): p. 110-126.
- [64] Sarmiento, T. and D. Devins. *Performance Measurement and Management in SMEs*. 2013. Reading: Academic Conferences International Limited.
- [65] Benner, M.J. and M. Tushman, *Process Management and Technological Innovation: A Longitudinal Study of the Photography and Paint Industries*. Administrative Science Quarterly, 2002. **47**(4): p. 676-707.