

Article

Business Model Innovation for Sustainable Performance in Retail and Hospitality Industries

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Abstract: In the service sector, technological innovation is typically dominated by suppliers, and hence involves external knowledge that can be easily acquired and imitated by competitors. However, innovation that can sustain superior performance in retail and hospitality firms tends to be internal and non-technical, involving business models. Building on the perspectives of the resource-based view and dynamic capability, this study aims to understand how industry turbulence in retail and hospitality affects the sustainable competitive advantage of the firms operating in these service industries. Based on a quantitative study of 214 retail and food services companies, our study has empirically demonstrated that firms operating in an industry with high turbulence have a higher probability of achieving a sustainable competitive advantage. Second, our findings establish that a firm's business model innovation (BMI) activities partially mediate this positive relationship. This suggests that BMI plays a role in enhancing the firm's ability to address the challenges of the present, as well as prepare itself to adapt to the industry evolution and revolution of the future. BMI not only influences the acquisition and application of external innovations, it also affects the generation of internal innovations.

Keywords: business model innovation; sustainable performance; industry turbulence; hospitality industry; food services; retail

1. Introduction

In many countries, the hospitality industry is one of the major contributors to the nation's social and economic development. In the recent decade, the industry and the broader service sector have witnessed significant disruptions from new entrants and intensifying rivalry among incumbents, with corresponding shifts in consumer preferences and expectations. Sharing economy startups deploying technological and business model innovations (BMI) backed by venture capitalists have radically enhanced operation efficiency in the food delivery services to achieve exponential growth in their market share. This has changed the competition landscape for the hospitality industry, particularly in the food services sector. Similar trends have been observed in the retail industry, where the rise of big data has enabled some retail operators to drive BMI to provide their consumers with more personalized shopping experiences through complementary online and offline channels [1].

It is apparent that innovation is of increasing importance for managers to achieve a sustainable competitive advantage in the hospitality industry [2,3]. While innovation is critical in both manufacturing and service sectors, prior studies have shown that the innovation antecedents and processes vary between the two sectors [4]. For example, management skills are found to have a greater influence on innovation in the latter, such as the hotel industry [5]. On the other hand, studies on manufacturing firms reveal that employee training can negatively affect innovation performance [6].

An important factor of innovation is knowledge that can be classified as technological and non-technological. Similarly, innovations can be distinguished between the technological and non-technological types. In the service sector, technological innovation is typically dominated by suppliers, and hence involves external knowledge that can be easily acquired and imitated by competitors [7]. Competitive advantage built on this kind of external technological innovation is hard to sustain. Technological innovation is likely the most prevalent form of innovation across industries, and the most studied type of innovation in the manufacturing sector [3]. However, innovation that can sustain superior performance in the hospitality industry tends to be internal and non-technical, involving business models.

Despite the growing importance of innovation in service-oriented industries such as retail and hospitality that face an unprecedented rate of technological disruptions and consumer behavioral changes, conceptual arguments and empirical findings concerning the link between industry turbulence and innovation constructs are limited and inconclusive. In the BMI literature, some scholars have asserted external environment changes as antecedent to BMI, while others have argued that business models are important factors affecting business performance. However, many studies tend to be isolated and conceptual, rather than complementary and empirical.

The aim of this study is to understand how industry turbulence in retail and food services affects the sustainable competitive advantage of firms operating in these sectors. It also seeks to investigate whether a firms' BMI activities are likely to be at the core of the mechanism. By addressing the gaps in the literature, we have made several significant contributions to the existing research on BMI and performance in the service sector. First, we empirically demonstrate that firms operating in an industry with high turbulence have a higher probability of achieving a sustainable competitive advantage. Second, our findings establish that the firms' BMI activities partially mediate this positive relationship.

The structure of this paper begins with a review of the recent innovations in retail and hospitality. We then follow with an explanation of the study's method and a presentation of the data analysis. We conclude with a discussion of the results, highlighting the research contributions and implications for managers and policymakers.

2. Background and Hypotheses

2.1. Innovation in Retail and Hospitality Industries

Extant theoretical and empirical research on innovation is limited in the retail and hospitality industries [3]. The dearth of studies in this area could be attributed in part to conceptual issues with the characteristics of service operators, and in part to the difficulty of accessing relevant data. Retail and food service operators, in particular, possess service features that have a distinct role in influencing innovation in the industry in several ways [8,9].

First, there are intangible elements and growing information contents in the provision of services. Consumers increasingly expect more information about the services they have purchased, and the operators have to deploy information and communication technologies to engage these consumers for superior business performance. Second, the features and quality of the services delivered to consumers depend on the service workers. Therefore, the human resource training and development system plays a crucial role in equipping the staff for their responsibilities and teamwork across departments. Third, there is a coterminality of services, where the producer and consumer are likely to be located in the same physical space, necessitating close interaction between them and hence making product and process manufacturing indistinguishable. Fourth, as human interaction experience can vary from one service engagement to another, there is a higher degree of variability—service heterogeneity—compared to product or process manufacturing. As the conditions and assigned resources for each service delivery transaction cannot be identical, the configuration and experience of the service cannot be duplicated.

In view of the above service features, service innovation requires the engagement of service staff and the involvement of customers, bringing into focus the closeness of the staff–customer relationship.

The customer experience of the service characteristics depends to a large extent on the integration of intangible elements (such as a delectable dining in a restaurant or a pleasant shopping experience in a retail store) and tangible elements (such as the quality of dishes served in the restaurant or the range of merchandise sold at the retail store) into the services provided (such as front desk staff handling of patrons' request and order fulfillment workflow) [10].

Unlike manufacturing and engineering firms, retail and food service operators are not producers of scientific knowledge. The technological innovations adopted by these service operators are generally procured from external technology service providers who offer services to integrate their solution offerings with the new or existing systems of the service operators. However, such external technological innovations can be easily acquired from the vendors and imitated by competitors [7]. Therefore, it is difficult to sustain a comparative advantage based on such innovations. This kind of technological innovation is probably the most common type of innovation across industries, and has been researched extensively among the manufacturing firms.

To sustain superior performance, the retail and food service operators have to develop, in addition to external technological innovations, both technological and non-technological internal innovations, such as new ways of organizing internal work structures and routines, as well as arranging external relationships with partners and customers. Recognizing the increasing importance of non-technological innovations, the Oslo Manual [11] has included new categories for non-technological innovations since 2005: organizational and marketing innovations.

Therefore, it is apparent that both internal and external sources of knowledge play a critical role in a firm's innovation process to gain sustainable competitive advantage. In the literature on external knowledge acquisition, prior studies have examined technological knowledge acquisition by firms, focusing on areas such as determinants in the form of patent characteristics [12] and organizational characteristics [13]. Nevertheless, there is still much room for future research on a firm's assimilation of external knowledge to combine with internally generated non-technological knowledge to develop new innovations in the retail and hospitality industries [3].

2.2. Industry Turbulence and Sustainable Competitive Advantage

Industry turbulence describes the speed of technological and market changes in the industry. According to Forbes [14], technological disruptions have been instrumental in transforming the retail and hospitality industries for the past two decades. Some service operators have experienced exponential growth in customer awareness and satisfaction through smart phones, social media, and context-specific search engines.

With the high penetration rate of smart phones and civilian access to the global positioning system (GPS) technology built by the United States (US) military, sharing economy internet ventures such as Foodpanda have developed mobile applications that enable consumers to request and track dining and food delivery services, even though these ventures do not own any restaurant or fleet of delivery vehicles. Food and beverage incumbents such as Starbucks provided similar applications to allow their patrons to manage their participation and benefit redemption in the firm's loyalty programs. Customers' lifestyles and preferences have also changed significantly in the market, with increasing demand for the convenience, speed, and novelty of service offerings. With the rising popularity of voice search among consumers, many service operators feel the pressure to change their search engine optimization strategy from the traditional written form of search queries with short-tail keywords to the new verbal form involving long-term keywords.

High industry turbulence depicts a high rate of unexpected and novel changes in the industry, posing challenges for service operators that respond with their existing strategies and organizational routines [15]. To gain sustainable competitive advantage, firms operating in an industry with high turbulence should continue to actively conduct market research and customer analysis to develop new or improved products, and re-organize themselves to maintain agility as the time to market becomes

increasingly shorter. Firms that fail to understand the speed of industry changes will not be able to respond to the threats and opportunities presented in the market.

A high rate of industry turbulence requires the firm to achieve both strategic agility and operational efficiency. The demand for strategic agility is driven by the rate at which current products and services become obsolete [16]. To mitigate the risk of obsolescence, industry turbulence compels the firm to develop new products and services that are radically different from their existing offerings ahead of their competitors to maintain their comparative advantage [17]. To ensure a good fit between the target market and its new product and service offerings, the firm has to engage in an iterative loop of search, experimentation, and learning with its internal staff and external partners, in order to adapt to the technological and market changes in the industry.

As the firm develops future-oriented strategies with new product road maps, it also has to continue to generate the much-needed short-term revenues by refining its existing product and services to extend their shelf life to retain its current customers. This requires the firm to attain operational efficiency through the exploitation of its existing knowledge generated internally and acquired from external networks. Although the improvements made to their product and services and innovations are of an incremental nature, they are essential in providing economic and financial stability to the firm in uncertain times of high industry turbulence [18].

In the literature, prior studies have posited that industry turbulence influences the relationships among firm strategy, culture, and performance [19–23]. More recently, a number of researchers had established the moderating role of industry turbulence on new product development and business performance. Market orientation, which is regarded as a capability of learning organizations, is gathered from continuous engagement with clients and the monitoring of competition, with the view to improving organizational processes and systems, and the firm's competitive advantage over time. Calantone, Garcia, and Dröge found that industry turbulence positively moderated the relationship between a firm's market orientation/innovativeness and its new product development speed [24]. Other researchers established that industry turbulence significantly moderated the linkage between market orientation/innovativeness and business performance [25,26]. In the context of high industry turbulence, firms have to take on greater risks in market-oriented and innovative investments more swiftly to meet the demands of a rapidly changing market. On the other hand, in the context of low industry turbulence, firms take fewer risks and spend more time making investment decisions.

Building on the results of the prior studies, it is apparent that firms operating in an industry of high turbulence are expected to generate successful incremental and radical innovations that can contribute directly to their competitiveness and the achievement of a sustainable competitive advantage [17]. Therefore, we propose:

Hypothesis 1. *Among firms that innovate, those operating in an industry with high turbulence have a higher probability of achieving a sustainable competitive advantage.*

In general, conceptual arguments and empirical findings pertaining to the relationship between industry turbulence and innovation constructs are limited and inconclusive [26]. In this study, we propose to advance the research by investigating the role of BMI as the mechanism through which a firm's response to industry turbulence is translated into sustainable competitive advantage.

2.3. Business Model Innovation as Mediator Between Industry Turbulence and Sustainable Competitive Advantage

In the BMI literature, there are many definitions of BMI. Among them, Sorescu, Frambach, Singh, Rangaswamy, and Bridges [27] (p. 57) proposed one that was closest to the retail industry: "a change beyond current practice in one or more elements of a retailing business model (i.e., retailing format, activities, and governance) and their interdependencies, thereby modifying the retailer's organizing logic for value creation and appropriation". Schneider and Spieth [28] (p. 134) reviewed 35 papers

on BMI and identified three distinct research streams—the “prerequisites”, “process” and “effects” of BMI—advocating further studies on “the process and elements of BMI as well as its enablers and effects in anticipation and response to increasing environmental volatility”.

In a more recent review of 150 peer-reviewed scholarly articles on BMI published between 2000–2015, Foss and Saebi [29] (p. 208) categorized them into two main lines of arguments. One group of studies posited a dynamic view of BMI and called for its conceptualization as “an organizational change process requiring appropriate capabilities, leadership, and learning mechanisms”. The other group, in contrast, adopted a static view of BMI as “new types of innovative ventures that may affect firm performance” [29] (p. 208).

Extant studies have highlighted changes in the external environment as antecedent to BMI. de Reuver, Bouwman, and MacInnes’ qualitative study of 45 e-business companies revealed that technological and market changes have a greater explanatory role in the business models than regulation conditions [30]. While these external factors are important for established firms over time, they are significant for startups during the service development phase, with a fading effect over time. Voelpel, Leibold, and Tikié [31] also proposed rapid and unpredictable changes in the business environment as motivating the reinvention of business models, while McGrath [32] identified disruptive innovations by competitors as a factor. In reviewing the literature, Coblenz and Sabatier [33] concluded that competition and the environment are among the six drivers of BMI.

Multiple scholarly works in the BMI literature have asserted that business models are important factors that affect firms’ business performance. Zott and Amit [34] drew upon the activity system perspective to argue the effect of social action and interaction on business model performance. Applying resource-based theory [35], Porter and Rivkin [36] postulated the positive relationship between BMI and sustaining competitive advantage. Rivkin [37] corroborated that firms with tightly coupled BMI may be less vulnerable to imitation, although they may also be less responsive to change. On the other hand, firms with loosely coupled BMI are more vulnerable to imitation, but more responsive to change. Analyzing data on new firms entering the Fortune 500 list between 1997–2006, Johnson [38] concluded that more than half of the younger entrants achieved superior financial performance through BMI. This has been supported by case studies illustrating how firms have become industry leaders and sustained their competitive edge because of their successful BMI efforts, including US food and beverage enterprise KFC, as documented by Bell and Shelman [39], and US e-commerce and cloud computing company Amazon, as documented by Johnson [38].

Zott, Amit, and Massa [40] further argued that the management’s ability to its innovate business model to address changes in the external environment should be regarded as a form of dynamic capability. According to Teece [41] (p. 1348), dynamic capability may be defined as the “capacity (1) to sense and shape opportunities and threats, (2) to seize opportunities, and (3) to maintain competitiveness through enhancing, combining, protecting, and, when necessary, reconfiguring the business enterprise’s intangible and tangible assets”. In this way, the BMI process may be viewed as a mechanism by which a firm responds to the challenges and opportunities found in its turbulent business environment. Therefore, sustainable competitive advantage is achieved in part because industry turbulence leads to the firm developing such dynamic capability, which in turn leads to innovations that strengthen its competitive position.

Based on Foss and Saebi’s [29] review of the BMI literature, many studies tend to be isolated and conceptual rather than complementary and empirical, and it is imperative that future research build on existing theoretical frameworks and prior works to explain the antecedents, moderators, and outcomes of BMI. In this study, we focus on industry turbulence and sustainable competitive advantage as the antecedent and outcome of BMI, respectively.

This study applies Sorescu et al.’s [27] definition of BMI for the retail industry and Zott et al.’s [40] postulation of BMI as a form of dynamic capability. Building on the works of de Reuver et al. [30] on the role of industry turbulence as an antecedent of BMI, and Rivkin [37] on sustaining competitive advantage as an outcome of BMI, this study posits that industry turbulence has a positive relationship

with a firm's BMI, which in turn has a positive relationship with its sustainable competitive advantage. Applying the dynamic capability and resource-based theories, we further postulate that a firm's BMI is a mediator between industry turbulence and its sustainable competitive advantage.

Hypothesis 2. *The positive effect of industry turbulence on the firm's probability of achieving a sustainable competitive advantage is mediated through its BMI activities.*

The conceptual model of this study is presented in Figure 1.

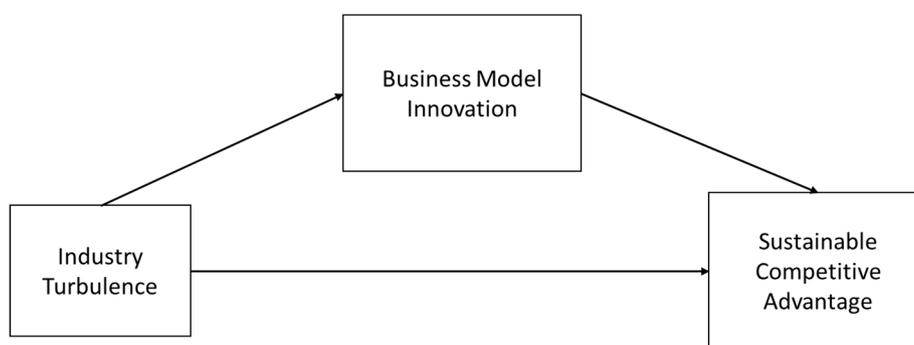


Figure 1. Conceptual model.

3. Materials and Methods

3.1. Sample and Data Collection

To validate our hypotheses, we collected data on companies that had participated in a capability development program offered by a public agency of Singapore to support the innovation projects of companies. The program targets selected industries of strategic importance to national economic objectives. The sampling frame comprised 897 retail and food services companies that had taken part in these innovation-related programs during the period from 2010 to 2017. Given the country's strategic approach of developing these service sectors as a pillar of economic growth, we focus on the retail and food services sectors in our study.

We selected these companies as our sampling frame, as they have actively engaged in innovation projects with public and private sector partners to stay competitive in their industry. The unit of analysis is the firm that had participated in the capability development program that aims to facilitate firms to successfully complete innovation projects with help from external consultants who are experienced in the innovation process.

Multiple sources were used in the data collection. Data on the company profile such as age, size, and industry were available from the agency's database. The data relating to industry turbulence, BMI, and sustainable competitive advantage were collected via online survey questionnaires from the company's senior management. The senior executives were selected as key informants due to their high level of familiarity with their company's innovation efforts and outcome.

As the study involved a survey of human subjects, the research team had obtained prior ethical approval from the funding university's institutional review board before launching the study in August 2017.

3.2. Measures

In this study, we utilized survey instruments that have been validated by prior research as reliable and valid. All of the constructs that have two or more items were evaluated for reliability. The Cronbach's alpha of these constructs ranged from 0.737 to 0.846, satisfying Nunnally's [42] guidelines of inter-item consistency.

Independent, mediating, and dependent variables were measured from survey responses and scored on a five-point Likert scale anchored at 1 = Strongly Disagree to 5 = Strongly Agree. For multiple-item measures, the average across items was computed, and principal component analysis was separately applied as a dimension-reduction strategy.

We used the independent variable *industry turbulence* to measure the rate of technological change and uncertainty about customer types and preferences in a volatile external environment for the past three years [43]. The items were adapted from Jaworski and Kohli [20]: “the technology in our industry is changing rapidly”, “in this market, customers’ preferences change quite a bit over time”, and “our clients regularly ask for new products and services”.

We applied Sorescu et al.’s definition to describe the mediating variable *BMI* as new practices in retailing format, activities, and governance [27]. We operationalized it by adapting the items on organizational and marketing innovations from the Oslo Manual [11]. Companies were invited to respond to the following *BMI* items for the past three years: “we are able to introduce new business practices for organizing procedures (e.g., supply chain management, business re-engineering, knowledge management, lean production, quality management)”, “we are able to introduce new methods of organizing work responsibilities/decision making (e.g., new system of employee responsibilities, team work, decentralization, department integration, training system)”, “we are able to introduce new methods of organizing external relations with other firms or public institutions (e.g., alliances, partnerships, outsourcing, or sub-contracting)”, and “we are able to introduce innovation in marketing (e.g., packaging, promotion, channels, pricing)”.

The dependent variable *sustainable competitive advantage* was operationalized using the average of radical innovation (e.g., “we are able to introduce a new good or service to market before competitors”) and incremental innovation (e.g., “we are able to introduce a new good or service that was essentially the same as a good or service already available from competitors” and “we are able to introduce significantly improved good or service”) achieved in the last three years, as successful incremental and radical innovations contribute directly to a firm’s achievement of sustainable competitive advantage [18].

The independent, mediating, and dependent variables were measured with three, four, and three items, respectively, with the Cronbach’s alpha values reported in Table 1. To control for variation in outcome due to the firm’s age, size, and industry, we used three control variables. Its *age* was computed based on the square of the difference between the year of founding and the year of its first participation in the innovation program with the public agency. The size of the firm was measured in terms of its annual sales in logarithmic form [3]. The industry was coded with a value of 1 = food services and 2 = retail.

Table 1. Descriptive Statistics and Correlation Table.

		Mean	SD	1	2	3	4	5	6	VIF	CA
1	Sustainable Competitive Advantage	3.69	0.96	1							0.846
2	Age	253.28	535.42	0.02	1					1.12	
3	Size	6.50	0.86	0.04	0.21 **	1				1.07	
4	Industry	1.50	0.50	0.01	0.24 **	0.03	1			1.07	
5	Industry Turbulence	3.89	0.83	0.45 **	−0.03	0.12 †	−0.02	1		1.22	0.737
6	Business Model Innovation (BMI)	3.65	0.89	0.77 **	−0.05	0.08	−0.02	0.41 **	1	1.21	0.816

† $p < 0.10$; * $p < 0.05$; ** $p < 0.01$ (two-tailed), $N = 214$.; VIF: variance inflation factor, CA: Cronbach’s alpha.

4. Results

In this study, we do not attempt to investigate all of the companies in retail and hospitality; instead, we are looking at only the innovative segments. In this connection, we focus on firms that had participated in a capability development program offered by a public agency of Singapore to support

the innovation projects of companies. Since our objective is not to generalize our findings to the rest of the industry that does not innovate, the analysis approach does not address the issue of selection bias. Out of the sampling frame of 897 firms that were invited to participate in the survey by the public agency, 107 retail and 107 food services firms replied with complete, usable responses, making a total of 214 responses at an acceptable response rate of 24%.

Table 1 summarizes the means, standard deviations, and correlations among the variables. As high correlations have been observed between some variables, variance inflation factors (VIF) are calculated and presented in Table 1. Their VIF values are found to be less than 3, and well below the threshold of 10 [44], addressing any possible concerns about multicollinearity issues. In general, the respondent firms have an average age of 15.9 years with a mean annual revenue of about 3.170 million Singapore dollars or 2.33 million US dollars.

As bias is a potential issue in self-reported survey data, we used principal component analysis to assess the validity of the perception items. Principal component analysis is a dimension-reduction tool that can be used to reduce a large set of items to a small set that still contains most of the information in the large set. It is also a mathematical procedure that transforms a number of correlated items into a smaller number of uncorrelated items called principal components. The first principal component accounts for as much of the variability in the data as possible, and each succeeding component accounts for as much of the remaining variability as possible. Thus, highly correlated items among the dependent variable, independent variable, and mediating variable can be transformed into a smaller set of uncorrelated items by using principal component analysis.

The analysis results generated show that *industry turbulence*, *BMI*, and *sustainable competitive advantage* can each be reduced to single component. As shown in Table 2 below, one component can explain 76.93% of the total variance in the three items in *sustainable competitive advantage* [45]. For the three items in *industry turbulence*, component 1 accounts for a maximum variance of 2.20 (66.51% of total variance), component 2 accounts for a variance of 0.62 that have not been accounted by the first component, and so on. For the four items in *BMI*, component 1 accounts for 65.14% of the total variance. In each of the three cases, one component explains the majority of the variance of multiple items. Consequently, each multi-dimensional variable can be represented by a single component.

Table 2. Total Variance Explained.

Variables	Component	Explained Variance	Cumulative % of Explained Variance	Total % of Explained Variance
Sustainable Competitive Advantage	1	2.31	76.93	76.93
	2	0.39	12.87	89.80
	3	0.31	10.20	100
Industry Turbulence	1	2.20	66.51	66.51
	2	0.62	20.65	87.16
	3	0.39	12.84	100
BMI	1	2.61	65.14	65.14
	2	0.64	16.05	81.19
	3	0.52	13.04	94.23
	4	0.23	5.77	100

In Table 3, the component matrix presents the component loadings, which are the correlations between the items and the component. Principal component analysis seeks a linear combination of items such that the maximum variance is extracted from the items. Therefore, the dependent variable *sustainable competitive advantage*, independent variable *industry turbulence*, and mediating variable *BMI* can be measured by using the component loadings to calculate their component scores in this way:

$$\text{Sustainable Competitive Advantage} = 0.87 * \text{item 1} + 0.86 * \text{item 2} + 0.89 * \text{item 3}$$

$$\text{Industry Turbulence} = 0.75 * \text{item 1} + 0.87 * \text{item 2} + 0.82 * \text{item 3}$$

$$\text{BMI} = 0.87 * \text{item 1} + 0.86 * \text{item 2} + 0.77 * \text{item 3} + 0.70 * \text{item 4}$$

Table 3 also reports the construct validity diagnostics of the measures. The composite reliability scores concur with the Cronbach's alpha reliability values reported in Table 1, exceeding the threshold of 0.7 for all three components representing our variables of interest. We observe that the average variance extracted (AVE) values are all larger than 0.5, suggesting adequate convergent validity. Applying Fornell and Larcker's [46] guidelines, we also conclude discriminant validity, with AVE in all three cases being larger than the squared correlations between pairs of components (Sustainable Competitive Advantage (SCA)–Industry Turbulence = 0.21, SCA–BMI = 0.58, and Industry Turbulence–BMI = 0.16).

Table 3. Component Matrix and Construct Validity Measures.

Variables	Item	Component 1	Average Variance Extracted (AVE)	Composite Reliability (CR)
Sustainable Competitive Advantage	1	0.87	0.76	0.78
	2	0.86		
	3	0.89		
Industry Turbulence	1	0.75	0.66	0.71
	2	0.87		
	3	0.82		
BMI	1	0.87	0.64	0.70
	2	0.86		
	3	0.77		
	4	0.70		

Given the cross-sectional nature of the data and the self-reported measure of *sustainable competitive advantage*, we selected a discrete choice model in our study. The dependent variable *sustainable competitive advantage* is constructed as a binary variable, which is coded as 1 when the value is larger than the component score with items scored at the midpoint of the scale, and coded as 0 otherwise. As the dependent variable is a binary variable, to test hypothesis H1 on the direct effect of *industry turbulence* on a firm's *sustainable competitive advantage*, we used a statistical software package, SPSS, to perform binary regression analysis. In Table 4, model 2 shows that *industry turbulence* has a positive and significant effect on *sustainable competitive advantage*, thereby supporting hypothesis H1.

Table 4. Binary Regression Results on Sustainable Competitive Advantage.

Variables	Dependent Variable: Sustainable Competitive Advantage			
	Model 1	Model 2	Model 3	Model 4
(Constant)	0.60(1.44)	0.04 [†] (1.68)	0.01 ^{**} (1.90)	0.01 ^{**} (2.02)
Age	1.00(0.00)	1.00(0.00)	1.00(0.00)	1.00(0.00)
Size	1.28(0.21)	1.18(0.22)	1.01(0.24)	0.95(0.25)
Industry	1.13(0.34)	1.16(0.36)	1.09(0.43)	1.09(0.43)
Industry Turbulence		1.42 ^{**} (0.09)		1.19 [†] (0.11)
BMI			1.91 ^{**} (0.10)	1.85 ^{**} (0.11)
R ² Change	0.01	0.09	0.32	0.32
Adjusted R ²	−0.01	0.09	0.31	0.31
F Change	0.56	20.84 ^{**}	96.60 ^{**}	49.54 ^{**}

[†] $p < 0.10$; * $p < 0.05$; ** $p < 0.01$ (two-tailed), N = 214.

We then regressed the dependent variable on the mediator in model 3, and on both the mediator and the independent variable in model 4 to validate hypothesis H2 regarding the mediating role of *BMI* on the positive relationship between *industry turbulence* and *sustainable competitive advantage* [45]. When controlling for the mediating variable in model 4, the coefficient on *industry turbulence* is a lower value compared to model 2 and still significant, albeit weakly so, indicating partial mediation.

To ensure greater robustness in our results for H2, we applied Preacher and Hayes' procedures for testing mediation [47]. Table 5 highlights that indirect effect is significant, with the direct effect still significant when the mediator *BMI* is included in the model, thereby supporting partial mediation in H2.

Table 5. Bootstrap Results for Indirect Effects.

IV	Mediators	Unstandardized Coefficient			Bias Corrected Bootstrap Confidence Intervals		
		Total Effect	Direct Effect	Indirect Effect	Boot SE Indirect Effect	95% Bootstrapped CI Indirect Effect	p-Value Test Indirect Effect
Industry Turbulence	BMI	0.5575 **	0.2105 **	0.3470 **	0.0710	[0.1982;0.4791] Sig.	0.0000

[†] $p < 0.10$; * $p < 0.05$; ** $p < 0.01$ (two-tailed), N = 214. SE: Standard Error.

The analysis reported in Tables 4 and 5 was also conducted with *industry turbulence*, *BMI*, and *sustainable competitive*, which were measured by taking the average of the three, four, and three items respectively that compose the independent, mediating, and dependent variables. The results from this robustness check were consistent with the findings obtained using the component scores.

5. Discussion and Concluding Remarks

Based on the results, our study has shown that industry turbulence has a positive relationship with the probability of firms achieving sustainable competitive advantage. We have empirically established that BMI mediates the positive relationship between industry turbulence and sustainable competitive advantage. Our findings have corroborated some of the theoretical tenets that we outlined earlier and made several contributions.

In our study, firms that are able to organize their resources (e.g., streamlining staff responsibilities and collaborating with partners to access external resources), capabilities (e.g., training and development), and processes (e.g., supply chain management) are found to be able to develop new or enhanced product or service offerings to stay ahead of their competition. This supports the views of Barney [35] and of Teece [41] that firms that can reconfigure their resources, capabilities, and processes are in a better position to innovate and compete for survival in the market place. In addition, from the perspective of open innovation, Chesbrough [48] advocated the need for companies to use both internal and external knowledge sources to develop open business models. It is apparent from the results that having a new or improved business model that puts processes to explore and exploit both knowledge sources in place can influence the availability of the existing stock of resources and capabilities for innovation.

For firms that operate in an industry of high turbulence, our study indicates that those that can achieve strategic agility and operational efficiency through the core mechanisms of BMI are able to maintain their comparative advantage. This is consistent with the views of Carayannis [49] and Pohle and Chapman [50], who argued that firms that are proactive in pursuing strategic orientation to innovation and agility are able to recognize future threats, mitigate them, and identify opportunities to capitalize on them. The proactiveness of firms in continuously monitoring technological trends and identifying the fast-changing needs of the customers allows the firms to make sense of the turbulences of the external environment [51]. By adopting the new technological advancements and applying them to their new or improved organizational contexts to engage partners and customers, firms are able to introduce innovation in marketing (e.g., promotion, pricing, channels, and packaging) to respond to the uncertainties of the competitive landscape.

In the innovation literature, technological innovation and business models are considered to be closely related, with Teece [52], Chesbrough, and Rosenbloom [53] focusing on how business models capture value from technological innovation. However, the results of our study reveal that BMI influences not only the exploration and exploitation of technological innovations, but also that of non-technological innovations that can be both radical and incremental in nature. Therefore,

BMI represents a more holistic form of organizational innovation that can play a role beyond value capture into value creation and value delivery. While a business model may limit the value of technological innovation, as it may restrict the type of its applications, BMI can address the limitations of existing business models to optimize the generation and application of technological and non-technological knowledge. This can present opportunities for new revenue streams or increased cost savings. To minimize the risk of imitation of a business model by competition, Teece [52] proposed a high level of complexity in the design of relevant business models. If the development and application of knowledge and technologies in a relevant business model cannot be easily imitated in another business model, BMI can influence the development of further innovations. This has implications for the retail and hospitality industries, where the service operators primarily acquire external technological innovations offered by vendors that supply to the other service operators operating in the same industry. It follows that a service operator that applies external technological knowledge that is available to competitors can still defend its business model against replication by competitors, provided that it adopts relevant BMI that is crucial in the development of internal technological and non-technological innovations.

5.1. Policy Implications

The foregoing discussion has several policy implications for public policymakers and firms in retail and hospitality. The retail and hospitality business is inherently subject to volatility from global economic and political developments, in addition to changing customer expectations due to technological advancements and cultural shifts. This study confirms that innovation-related support is the appropriate policy instrument for helping firms capitalize on the opportunities arising from industry turbulence. Innovation should be viewed broadly, encompassing innovation in business models, as well as product (and service) innovation. Moreover, firms that achieve BMI capture more value from product innovation, and create additional value from the interaction between the two forms of innovation. Since BMI is less industry-specific than product and service innovations, there are opportunities for inter-industry knowledge transfer on BMI best practices. Therefore, policy programs should be scoped to address the synergies between BMI and product innovation, and source for expertise from outside the industry.

Implementing a new or improved business model that establishes routines to explore and exploit internal and external knowledge sources can affect the existing stock of resources and capabilities for innovation. Building on the existing stock, the new or improved business model can influence how it can be used and combined to generate new stock of resources, capabilities, and knowledge. To implement BMI, policymakers should therefore consider the whole innovation value chain from knowledge generation through conversion to commercialization.

Our study underscores the importance of organizational ambidexterity [51], balancing between exploratory and exploitative pursuits as a condition for successful BMI to simultaneously pioneer radical innovations and harness incremental gains. This implies that BMI plays a role in enhancing the firm's ability to address the challenges of the present, as well as prepare itself to adapt to the industry evolution and revolution of the future.

Finally, this study shows that senior managers must make BMI a priority, rather than delegating the task to middle managers or external parties. It is apparent that BMI does not only influence the acquisition and application of external innovations, it also influences the generation of internal innovations.

5.2. Limitations

Although this study has offered some key insights into how BMI can serve a sustainable competitive advantage in an uncertain external environment, future research is recommended to advance several areas. First, the study can be extended beyond retail and hospitality to other service industries. This will allow us to understand if, when, and how organizations in other service

industries with different levels of industry turbulence can align their business model with sustainable financial goals.

Second, survey-based research faces the issue of common method bias. To address this, we use multiple data sources such as archival data in addition to survey data. Third, and related to the second limitation, the cross-sectional nature of the survey data excludes a time dimension for defining sustainable advantage. Nevertheless, we have used survey data to validate our hypothesized relationships. The survey method was used for greater accuracy in construct measurements and richer data collection in investigating the dynamics between BMI and industry turbulence on sustainable competitive advantage. While archival data would allow the use of more sophisticated quantitative methods for analysis, they lack richness in describing complex organizational processes such as BMI. Therefore, we recommend that future research employ more advanced data collection methods to further investigate the causal relations identified in this study.

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