

Service Innovation and Product Innovation with mediation of Competitive Advantage to Performance of Jasmine Brown Rice in North eastern of Thailand

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Abstract

The objective of this study is to examine the role of service innovation and product innovation in business performance of Thai Jasmine Brown Rice. Furthermore, this study examined the mediating role of competitive advantage in relation to the business performance. For this purpose, the current study preferred quantitative research approach. A questionnaire was designed to measure service innovation, product innovation, competitive advantage and business performance. The questionnaire was distributed among the respondents in Thailand to collect data. Statistical tool was used to analyze the data and 230 valid responses were used. Results of the study highlighted that business performance can be promoted with the help of service innovation. Additionally, the role of product innovation is also most important in business performance. Therefore, the business performance of Thai Jasmine Brown Rice can be promoted by enhancing the level of services and providing the quality innovation in products. Moreover, competitive advantage can promote business performance by transferring the positive effect of service innovation along with the product innovation on business performance.

Keywords. Service innovation, product innovation, competitive advantage, business performance, Thai Jasmine Brown Rice.

1. Introduction

Thai Jasmine Brown Rice, also known as Brown Thai Fragrant Rice (Jiarpinijnun, Osako, & Siripatrawan, 2020), grows in eastern provinces of Thailand. Brown rice consisted of brown jasmine rice is one of the healthier rice's as compared to the white rice. It has better quality because it has more fiber and protein as compared to the other rice types. This rice has the ability to provide aid in blood glucose control. However, like white rice, brown rice does not comprise more quantities of most elementary vitamins as well as minerals. As Thailand is one of the larger rice produce countries as compared to the other rice producing nations (Arunrat, Pumijumpong, Sreenonchai, Chareonwong, & Wang, 2021; Sutthiphai et al., 2022). Thai rice production in Thailand is major importance for the Thai economy. The rice exports by the Thai government to the other countries generate revenue which has major importance for Thai

economy. The finest quality of rice produced by the Thailand agriculture sector has captured the worldwide rice market. In rice industry of Thailand, the role of Thai Jasmine Brown Rice has major contribution.

Despite the higher contribution of rice industry globally (Boonmalert, Phoothong, Nualkaw, & Klakhaeng, 2020; Khantanapha, Rattanapun, & Morasilpin, 2020), the performance of brown rice is not higher in Thailand. The contribution of various other types of rice in Thai industry is higher than the brown rice. Although the brown rice has more importance and major quality as compared to other rice types but the contribution to rice industry is not as much as higher at it should be. Thailand also exports the rice to various countries including the brown rice, but the overall performance of brown rice in Thai rice industry is not very much high. Therefore, it is more important for rice industry of Thailand to promote brown rice in Thailand to enhance the contribution in rice industry. In

this direction, the business performance of brown rice is needed to promote in Thailand.

Brown rice in Thailand has competitive advantage as compared to the other rice types. Not only in Thailand but globally the brown rice has significant importance. Therefore, the brown rice always has competitive advantage on various other rice type. However, this competitive advantage can be further highlighted with the help of different services along with the product related to the brown rice. According to this study, services related to the brown rice can be promoted. The performance of this type of rice can be increased with the help of innovative services provided by the companies of rice industry. As service innovation has vital role in business performance which is reported by the literature (Fernando, Jabbour, & Wah, 2019; Hameed, Nisar, & Wu, 2021). Generally, service innovation has major importance in any business activity, therefore, it is important to promote innovation in services in rice industry to enhance overall business performance. Service innovation is important to generate competitive advantage in rice industry of Thailand, specifically, it is most important to promote competitive advantage in relation to the brown rice. This study proposed that brown rice business performance can be promoted with the help of better innovative activities in services. Furthermore, service innovation is not only the element to enhance business performance with the help of competitive advantage but product innovation is also most significant to promote business performance with the help of competitive advantage. The products made with the help of rice can be promoted through innovation. The use of rice in various products can be enhanced with the help of innovation. The companies making different products of rice can be highlighted and with the help of innovative activities. In this way, the innovation in product has the ability to promote competitive advantage. As highlighted by other studies that innovation led to the competitive advantage (Nimfa et al., 2021; Zameer, Wang, Vasbieva, & Abbas, 2021). The promotion of competitive advantage in rice making product can enhance the level of business performance of brown rice. Hence, this study addressed that the business performance of brown rice can be increased with the help of competitive advantage and competitive advantage can be

promoted with the help of service innovation and various other innovations related to the rice products.

The objective of this study is to examine the role of service innovation and product innovation in business performance of Thai Jasmine Brown Rice. Although several previous researchers has investigated the business activities of Thai rice industry (Boonmalert et al., 2020; Kumse, Suzuki, Sato, & Demont, 2021) in these previous studies the researchers has investigated various services along with different products of rice industry. However, brown rice was ignored by previous studies. The investigation on Thai brown rice is quite limited in literature and number of previous studies have ignored this important area. The brown rice has major importance and a higher level of quality rise in Thailand; however, it is not focused by the previous studies. That is the reason, the business performance of brown rice in Thailand is not majorly discussed and investigated in relation to the various other factors. Therefore, the current study contributed by attempting the role of different services and product related factors in business performance of brown rice. Along with various innovative services and product innovation, this study also investigated the role of competitive advantage in brown rice business performance. This is the unique study with considered brown rice in Thailand and its performance in relation to the innovation in services and innovation in products through competitive advantage.

2. Literature Review

The current study developed the framework to support the business performance of brown rice in Thailand. The framework is designed with the help of independent variables, dependent variable and mediating variable. The relationship considered in the framework is based on the previous studies. The arguments of previous studies are considered to develop the framework; however, this is considered by observing various ignored areas of literature to develop the current study framework. The previous investigations on business performance related to the rice industry (Bahri, Hakim, Juanda, & Sahara, 2021; Boonmalert et al., 2020; WANG & LI, 2015) have ignored several areas related to the competitive advantage, service innovation and product

innovation. In this regard, the current study considered the effect of service innovation and product innovation on performance of brown rice in Thailand. In addition to this, the study considered competitive advantage between various service-related innovations and business performance. Competitive advantage is also considered as mediating variable

between different innovation in products and business performance of brown rice in Thailand. Thus, the framework of this study is based on the effect of innovation related to the services and products on competitive advantage and business performance. The relationship between this variable is highlighted in the framework of the study presented in Figure 1.

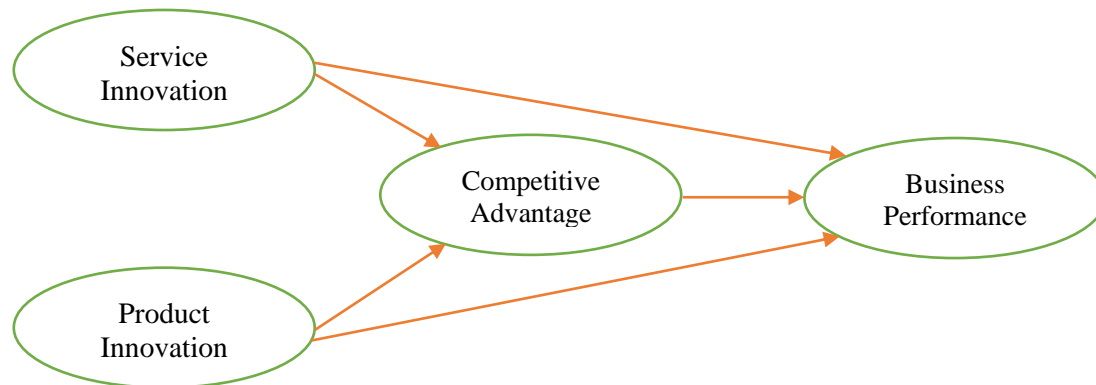


Figure 1. Framework of the study showing the relationship between service innovation, product innovation, competitive advantage and business performance

2.1 Business Performance

Business performance is the key element of any e-business because the company's success in the market is business on business performance (Bahri et al., 2021; Boonmalert et al., 2020). Different studies treated business performance in different ways. For example, the business performance can be based on the financial statements of the company. It can also be based on the customer satisfaction. Other studies is measured business performance in two major ways, financial performance and non-financial performance (Nguyen, Ntim, & Malagila, 2020). The current study measured business performance through non-financial measures. However in non-financial measures the current study considered sales of the rice product making companies, revenue of the company, profit of the company, return on assets of the company and return on equity of the company. Although the profitability, return on asset and return on sales are linked with the financial performance, however this study does not consider the financial data.

2.2 Service Innovation

“Service innovation” has become a term denoting to innovation taking place in the

numerous settings of services, with the introduction of different new services or enhancements of current services. In the current business environment, the innovation in services has major important (Palmié, Miehé, Oghazi, Parida, & Wincent, 2022). Previously companies were focusing to promote innovation in product, however in the recent competitive environment the companies are trying to enhance innovation in services, because the better level of services provided to the customers can enhance the level of satisfaction among customers (Yeh, Chen, & Chen, 2019) and it leads to the customer retention. Similarly in the rice industry of Thailand service innovation has vital importance because rice industry of Thailand export rise to several countries and in this process the innovation in services and the quality of services has major importance. Several other countries are also producing high-quality rice products, therefore to compete in the global market, it is important to innovate new services. Innovation in services is based on to improve already available services to enhance the satisfaction level of customer or to develop new services. Innovation in services include new services as well as improvement in existing services. Generally, service innovation is based on the customer involvement (Weng,

Ha, Wang, & Tsai, 2012; Xie, Wang, & García, 2021). The customer feedback is always important to innovate something new in services. Thus, rice industry should promote service innovation with the help of customer involvement. Additionally, networking is also most important in service innovation and networking is the important part of services. The connection between other industries globally to export the rice is important to promote various services related activities.

2.3 Product Innovation

Product innovation can be described as the development of new products, improvement in design of existing products, or utilization of new materials or mechanisms in the manufacture of existing products (Giersing et al., 2021). Rice industry produces several products based on the quality of rice. In Thailand brown rice is also used to make various product as it has significant level of quality and these products export by the Thai government to various other countries. In this process the innovation on product based on rice has major importance. Number of other rice producing countries are also making several rice based products and exporting to the the whole word. To compete with other countries, the product innovation has key importance. The innovation in rice products may be based on the new product development as well as changes in already established products. The manufacturing of products must have innovative elements to attract the customer (Ayodele & Oginni, 2019). As highlighted by the previous studies that in a competitive business market the product innovation is always play a major importance in business activities.

2.4 Competitive Advantage

Competitive advantage of any company is based on the unique strength of the company (Kumar, Mamgain, Pasumarti, & Singh, 2022). Various unique strengths of the company which has significant advantage in manufacturing of various pproducts and distribution of various services which do not have by the competitor is known as competitive advantage. Generally, competitive advantage helps the company to produce several goods and distribute several services with low cost and high quality. The competitive advantage is not only based on

tangible things but it also based on the skills of the employees and innovative process along with the latest technology. Generally, competitive advantage is based on the cost leadership strategies (Liu & Atuahene-Gima, 2018). The company having lower cost generally lead in the market and capture the more market share. Additionally, the differentiation strategies among the company are led the company to produce something different as compared to the competitor having important benefits lead to the competitive advantage. Therefore, competitive advantage can be in any form it may be in cost leadership or differentiation leadership, however whatever the competitive advantage, it has significant importance over the competitor which produce favourable outcomes in a competitive market.

Both service innovation as well as product innovation has important relationship with business performance. The innovation in services can increases the quality of the services and customers always require better quality services. The innovation in services also bring something new in the services which could be the point of attraction for the customers. In the changing business environment, the innovation in services is one of the mandatory element to promote business activities. The customers always required something new in services against the specific price paid to avail the specific service. Therefore, in the rice industry of Thailand, the products related to the rice also require significant level of quality services which is possible with the help of innovation having positive influence on business performance. Similar with the current study previous authors also argued that innovation in services have positive effect on business performance (Li, Li, & Chan, 2019). Furthermore, similar with innovation in services, the innovation in products also has important role in business performance (Hamdani & Susilawati, 2018). The traditional products require innovative elements which lead to the significant level of improvements to promote the level of customer expectations. The new features added in the products with the help of product innovation always lead to the intention of the customers. In business competition the companies are leading with innovation capabilities (Fan et al., 2021) both in service as well as products. Therefore, product

innovation is one of the influential elements for business performance.

Hypothesis 1. Service innovation has positive effect on business performance.

Hypothesis 2. Product innovation has positive effect on business performance.

The above section shows that the innovation in services and innovation in products can lead to the business performance. Furthermore, along with the direct effect of innovation in services and innovation in rice production can effect business performance. It also has indirect effect on business performance. Indirectly both the innovation types has effect on the competitive advantage of the companies which shows positive effect on business performance. As proved by several previous studies that innovation always lead to the competitive advantage (Fatonah & Haryanto, 2022; LESTARI, LEON, WIDYASTUTI, BRABO, & Putra, 2020). This study addressed that service innovation has the ability to enhance competitive advantage. Because the unique addition in services always provide the advantages to the company. Additionally, new features added to the product always add value to the product and it behaves like competitive advantage for the company. Therefore both the innovation in services as well as products causes to gain competitive advantage and competitive advantage lead to the business performance. Hence, indirectly both innovation types also has positive effect on business performance with the help of competitive advantage. Therefore, according to the discussion, competitive advantage is playing the role of mediating variable which can help to transfer the positive effect of both types of innovation on business performance. Therefore, follwing direct and indirect, follwing hypotheses are proposed.

Hypothesis 3. Service innovation has positive effect on competitive advantage.

Hypothesis 4. Product innovation has positive effect on competitive advantage.

Hypothesis 5. Competitive advantage has positive effect on business performance.

Hypothesis 6. Competitive advantage mediates the relationship between service innovation and business performance.

Hypothesis 7. Competitive advantage mediates the relationship between product innovation and business performance.

3. Research Method

The current study designed survey questionnaire to measure service innovation, product innovation, competitive advantage and business performance. To measure these variables, the current study adopted various questionnaires from previous studies. Already developed scales on these variables are adapted from previous studies. Majorly, the dependent variable; business performance is measured in relation to the competitor. Business performance is measured by considering sales of rice, companies return on assets, profitability of rice companies and equity of rice companies in relation to the competitor. Furthermore, competitive advantage is measured with the help of unique strengths of the companies. Additionally, service innovation as well as product innovation is considered with the help of new service development, new product development and the improvement in existing service as well as products. All these measures of these variables are combined and designed a survey questionnaire to collect data from respondents. In this way, the current study developed two sections of questionnaires in which the first section was based on the information related to the respondent's age, education, gender and marital status. The second section of the questionnaire was based on various adapted questions related to the the service innovation, business performance, competitive advantage and product innovation. After the development of questionnaire, this questionnaire was sent to the experts to examine the reliability and validity of the questionnaire. The face validity of the questionnaire was confirmed by reviewing the questionnaire from experts in the field of business performance. Additionally, content validity of the questionnaire is also confirmed from the experts. Back to back translation of the questionnaire is also considered in this study to ensure the quality of the items. Finally, after the confirmation of content validity and face validity, the questionnaire was sent to the respondents in Thailand. The questionnaire was distributed among the employees of various companies related to the rice industry in North eastern of Thailand. This study distributed 450 questionnaires among the respondents. However, only 180 questionnaires were returned which were used to achieve the study objective. Finally, this study used 5-point likert

scale to take response on the questionnaire. The likert scale is most important to get response from the respondents (Musangu & Kekwaletswe, 2012; Yusof et al., 2019) in relation to get their opinion and views related to a specific topic.

4. Findings

Finding of the current study are grounded on data analysis through statistical tool. A statistical tool is utilised to examine the relationship between variables to achieve the study objective. However, before to examine the effect of variables on dependent variable, it is needed to address the reliability as well as validity of the scale. Without the confirmation of reliability and validity, the relationship between variables cannot be considered. Although the statistical tool can provide the results on unreliable and invalid data, however, the the results will not be based on originality. Therefore, first of all, the current study examined the factor loadings. The confirmatory factor analysis (CFA) is carried out with the help of partial least square PLS) (Hair, Hult, Ringle, Sarstedt, & Thiele, 2017; Khan et al., 2019). In this process, all the items having factor loadings above 0.5 was retained, however all the items having factor loadings

below 0.5 was deleted from the study. Table 1 shows the factor loading and it is evident that all the factors have loadings above 0.5. Additionally, to examine the reliability, the current study also considered composite reliability. Literature shows that the minimum level of composite reliability must be higher than 0.7. The composite reliability is also given in Table 1 which shows that product innovation, service innovation, competitive advantage and business performance have composite reliability higher than 0.7. Additionally, during the confirmation of reliability and validity, it is also important to confirm average variance extracted (AVE). The minimum level of AVE is higher than 0.5 (Chairatana, 2021; Hair et al., 2019). It is also given in Table 1 that all the variables achieved the required level of AVE. Hence, the achievement of factor loadings, composite liability and AVE, the convergent validity in the current study is achieved. Finally, in measurement model, this study examined discriminant validity. Discriminant validity is also important to achieve before to examine the effect of independent variables on mediating and dependent variable. The discriminant validity is given in Table 2 with the help of cross-loadings which shows that the current study achieved the discriminant validity. Figure 2 shows the CFA.

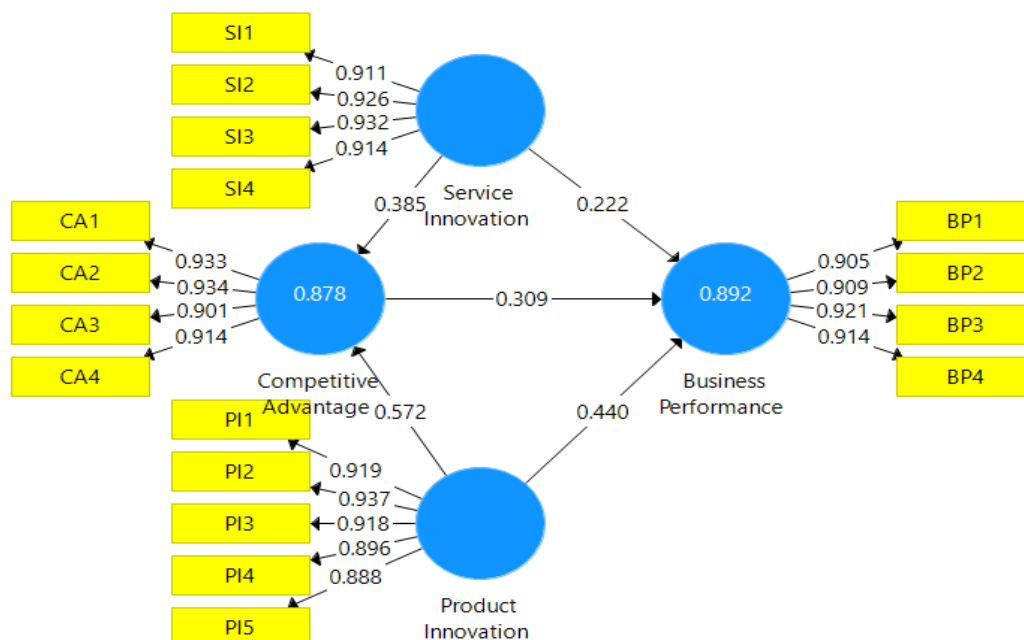


Figure 2. Confirmatory Factor Analysis (CFA)

Table 1. Factor Loadings, Reliability and Convergent Validity

Variables	Items	Loadings	Alpha	Composite Reliability	AVE
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Business Performance	BP1	0.905	0.933	0.952	0.832
	BP2	0.909			
	BP3	0.921			
	BP4	0.914			
Competitive Advantage	CA1	0.933	0.94	0.927	0.848
	CA2	0.934			
	CA3	0.901			
	CA4	0.914			
Product Innovation	PI1	0.919	0.939	0.961	0.831
	PI2	0.937			
	PI3	0.918			
	PI4	0.896			
	PI5	0.888			
Service Innovation	SI1	0.911	0.821	0.897	0.808
	SI2	0.926			
	SI3	0.932			
	SI4	0.914			

Table 2. Cross-Loadings

	Business Performance	Competitive Advantage	Product Innovation	Service Innovation
BP1	0.905	0.862	0.827	0.831
BP2	0.909	0.859	0.897	0.842
BP3	0.921	0.824	0.842	0.827
BP4	0.914	0.798	0.817	0.795
CA1	0.876	0.933	0.88	0.853
CA2	0.838	0.934	0.862	0.848
CA3	0.826	0.901	0.828	0.817
CA4	0.837	0.914	0.831	0.823
PI1	0.844	0.844	0.919	0.827
PI2	0.823	0.835	0.937	0.828
PI3	0.83	0.81	0.918	0.835
PI4	0.855	0.84	0.896	0.838
PI5	0.874	0.878	0.888	0.827
SI1	0.832	0.826	0.836	0.911
SI2	0.838	0.831	0.85	0.926
SI3	0.836	0.836	0.836	0.932
SI4	0.823	0.848	0.836	0.914

Moreover, the current study assessed the structural model (Astrachan, Patel, & Wanzenried, 2014; Mohammed et al., 2022; Yin, Wang, Xu, Wan, & Wang, 2022; Zaman, Nawaz, Tariq, & Humayoun, 2019) to examine the effect of independent variables on business performance along with the mediating role of

competitive advantage. In this process t-value 1.64 and beta value is considered. The direct effect of service innovation and product innovation on business performance along with the direct effect of service innovation and product innovation on competitive advantage is presented in Table 3 and the structural model is presented in Figure 3. Results in Table 3 shows

that service innovation has positive effect on competitive advantage, it also has positive effect on business performance. Moreover, product innovation has positive effect on competitive advantage and business performance. In last direct effect, it is found that competitive advantage has positive effect on business performance. Therefore, all five direct hypotheses are supported because the t-value is above 1.96 and beta value is positive. Finally,

this study proposed indirect effect and the results of indirect effects are given in Table 4. The indirect effect of competitive advantage between product innovation and business performance is significant. Moreover, the indirect effect of competitive advantage between product innovation and business performance is also significant as the t-value is above 1.96.

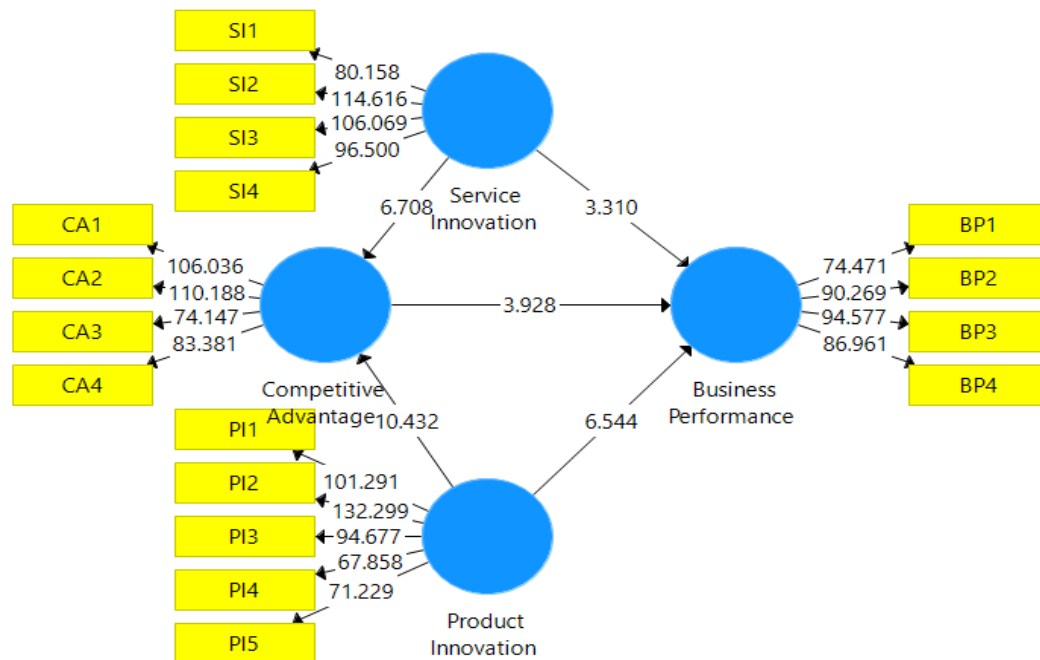


Figure 3. Structural Model

Table 3. Direct Effect

	Beta	Mean	SD	T Statistics	P Values
Competitive Advantage -> Business Performance	0.309	0.303	0.079	3.928	0
Product Innovation -> Business Performance	0.44	0.443	0.067	6.544	0
Product Innovation -> Competitive Advantage	0.572	0.573	0.055	10.432	0
Service Innovation -> Business Performance	0.222	0.226	0.067	3.31	0.001
Service Innovation -> Competitive Advantage	0.385	0.385	0.057	6.708	0

Table 4. Indirect Effect

	Beta	Mean	SD	T Statistics	P Values
Product Innovation -> Competitive Advantage -> Business Performance	0.177	0.174	0.048	3.652	0
Service Innovation -> Competitive Advantage -> Business Performance	0.119	0.117	0.035	3.373	0.001

5. Conclusion

Results of the study revealed that business performance of brown rice in Thailand is most important which require significant strategies in relation to the innovation. There is immense need to promote business performance through services and products. This study highlighted that business performance of brown rice in Thailand can be promoted with the help of competitive advantage. The competitive advantage has positive role to influence performance of business in relation to the brown rice in Thailand. However, it is one of the challenges to promote competitive advantage. The current study proposed innovations in services to enhance rice business. It is proved that service innovation has important potential to enhance competitive advantage as the new service development along with the improvements in existing services can help to gain competitive advantage which can enhance business performance. Similarly, this study recommended that along with the innovation in services, the innovation in products also has key importance for rice business performance. Innovation in various products related to the rice can also help to gain competitive advantage. The new rice product development along with the significant changes to improve the current product can lead to gain a competitive advantage. As in a highly competitive market the role of competitive advantage is most important in business performance. Therefore, in Thai rice industry, to enhance business performance of brown rice, the role of service innovation and product innovation through competitive advantage is important.

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