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The Roles of Market Knowledge Management System and Market Knowledge Sharing on SMES' Organizational Performance

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Abstract: Market knowledge becomes an important factor in creating competitive advantage to an organization. Those knowledges should be managed and analyzed by Market Knowledge Management System (MKMS) in order to create an advantage to an organization. The new discovered market knowledge should be shared within an organization so that an organization can identify a new pattern, a new trend and a new preference in a market. However, majority of SMEs is still neglecting market knowledge sharing as a success factor of an organizational performance. The purposes of this study are to investigate the impact of market knowledge on market knowledge management system (MKMS). Second is to examine the effect of market knowledge management system (MKMS) on market knowledge sharing. The study also aims to examine the influence of market knowledge sharing (MKS) on organizational performance (OP). The last objective is to study the mediating effect of market knowledge management system and market knowledge sharing. The study was conducted on 209 Thai SMEs and the data was analyzed using SmartPLS 3. The results showed that market knowledge sharing (MKS) has positively impacted organizational performance. However, customer knowledge, competitor knowledge and supplier knowledge did not have indirect effect on organizational performance.

Keywords: Market Knowledge, Market Knowledge Management System, Market Knowledge Sharing, Organizational Performance

1 Introduction

The small and medium enterprises (SMEs) sector has an important role to play in developing economies not only in economic development, but also in poverty alleviation and job creation. Also, SMEs have been recognized as an important strategic sector in Thailand for generating high economic growth, reducing unemployment, inequality and poverty. SMEs stimulate private ownership and entrepreneurial skills. SMEs organizational performance is a focal phenomenon in business studies. However, it is also a complex and multidimensional phenomenon. Performance can be characterized as the firm's ability to create acceptable outcomes and actions. For many organizations achieving improved performance is not only dependent on the successful deployment of tangible assets and natural resources but also on the effective management of knowledge. Knowledge has become a key asset and competitive advantage for many organizations operating in increasingly complex and competitive environments. Knowledge is the crucial factor behind sustainable advantage and success for organizations. Very often, the sole survival and success of an organization depends on its ability to harness and use knowledge. Therefore, knowledge, as a key asset, is fundamental to building an organization's competitive advantage.

The knowledge-based economy has brought about significant shifts in the way organizations respond to rapidly

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changing customer preferences and constantly shifting competition. Market knowledge becomes an important factor in creating competitive advantage to an organization. According to the Knowledge Based View (KBV) theory, market knowledge becomes an external factor which is vital and can affect an organizational performance. Market knowledge consists of customer knowledge, competitor knowledge and supplier knowledge. Those knowledges should be managed and analyzed by Market Knowledge Management System (MKMS) in order to create an advantage to an organization. The new discovered market knowledge should be shared within an organization so that an organization can identify a new pattern, a new trend and a new preference in a market. However, majority of SMEs in Thailand misunderstood about deploying an information technology. They perceive information technology as a success factor of an organizational performance. Therefore, the purposes of this study are to investigate the impact of customer knowledge, competitor knowledge and supplier knowledge on market knowledge management system. Second is to examine the effect of market knowledge management system on market knowledge sharing. The study also aims to examine the influence of market knowledge sharing on organizational performance. The last objective is to study the mediating effect of market knowledge management system and market knowledge sharing.

2 Literature Review

2.1 Market Knowledge

According to the stakeholder theory [1], stakeholders refer to groups and individuals who can affect or are affected by the organization's purpose which include customers, competitors, suppliers, government, NGOs and communities [2,3,4]. They are divided into primary and secondary stakeholders. The primary stakeholders are those who are directly involved in a market relationship such as customers, competitors and suppliers. Meanwhile secondary stakeholders, government, NGOs, communities and etc., refer to those who are not directly involved in a market relationship [5]. This research studies only on primary stakeholders.

The voice of the customers is deployed throughout the product planning and design stages [6]. It will become an input in the product design and development [7]. Customers should be the driving force behind product development. A firm which commits itself to superior customer service and integrates customer preferences and needs into its product development strategy has the best guarantee for long-term success [8]. The new product development process has relied heavily on customer input to evaluate a product innovation's viability, design, and positioning [9]. Any changes in customers' demands may negatively affect the value of current marketing capabilities.

Competitors are defined as organizations or firms offering products or services that are close substitutes, in the sense that they serve the same customer need [10]. Competitors' knowledge would provide a solid basis of information pertaining present and potential competitors for executive actions. It also can enhance a firm's competitive advantage by allowing it to benchmark with, learn from, imitate, and improve on the products of successful competitors [11]. A considerable body of marketing thought suggests that competitor orientation should improve an organization's performance by enabling the organization to position its strengths against rivals' weaknesses [12].Besides, customers' implicit needs and preferences, an organization also needs to analyze competitors' strength, weaknesses, capability and strategy in order to sustain competitiveness in the market [12].This rivalry view is also shared by prominent theorists in management and economics, who argue that an organization's performance largely depends on its ability to "beat the competition" either by manipulating an industry's structural parameters, as in competitive forces theory [13], or by developing difficult-to-imitate competencies, as in the resource-based perspective [14]. Specific competitor orientation may result from an in-depth analysis of the behavior, products, and strategies [15].

Supplier refers to a supplier that has a clear understanding of the manufacturer's needs and expectations. To the extent that a supplier is confident in its understanding what a manufacturer wants. Suppliers become one important source of knowledge due to the relationship established by an organization. To remain competitive in their mainstream markets, an organization must establish a cooperative relationship with suppliers in order to reduce transaction costs associated with "buy" decision [16].

Suppliers do not only become the source of input materials for an organization, they also become the source of

customer orientation and information. Since suppliers are dealing with customers every day, they can provide information on customers' preferences and needs of products and services. Thus, an organization can identify what customers need and what are lacking in the market through establishing a good relation with various suppliers. Therefore, an organization can provide products and services according to customers' needs on time and it will become the first mover in the market compared to its competitors.

2.2 Market Knowledge Management System

The delevolpment of knowledge management system (MKMS) makes an organization to retrieve needed information very quickly and on time. Organizations use different information systems to facilitate knowledge sharing through creating or acquiring knowledge repositories, where employees share expertise electronically and access to shared experience becomes possible to other staff [17]. This system is very important especially in service providing organization such as telephone operator department. Any delay in response to customers will make customers dissatisfied with the service. Tsoukas and Vladimirou [18] found that telephone operators will retreive customers' profile very quickly. Ideally, an organizational member will have all information they needed.Without a solid IT infrastructure, an organization cannot enable its employees to share information on a large scale. Yet the trap that most organizations fall into is not a lack of IT, but rather too much focus on IT.

Information system becomes one of the critical success factors in implementing knowledge management [19]. The study shows that information system has a significant positive influence on the process of knowledge creation [20]. A study shows that as knowledge sharing increases, the existence of information systems also increases. In other words, information systems and knowledge sharing are positively related [21]. The study in small innovative hi-tech companies shows that the use of information technology (IT) assists in creating new knowledge [22]. IT represents a valuable tool where individual, group and organizational knowledge are continuously codified, stored, diffused and renewed. It also represents a significant source of organizational learning and knowledge creation.

The study of Yang, Chen and Wang [23] on the impacts of information technology on knowledge management practice in construction industry shows that levels of IT application are positively associated with projects' levels of knowledge management. Additionally, project outcomes can be achieved with higher levels of knowledge management. The findings also indicate IT application affects project performance in terms of schedule and cost success as well as quality and safety performance.

As IS are being improved and developed, discussions on their effectiveness and evaluation of their success have been continuously debated by researchers, scholars and practitioners [24]. In an attempt to evaluate or measure the effectiveness of IS, various models and frameworks have been proposed and validated in diverse IS implementation settings. Masrek [25] reformulated the IS effectiveness model by developing four dimensions of IS effectiveness model. Masrek's IS effectiveness model consists of four dimensions: service quality, systems quality, information quality and user satisfaction.

Service quality is defined as the users' subjective assessment that the service they are receiving from the portal is the service they expect. Aspects covering service quality include responsiveness, reliability, confidence, empathy, follow-up service and competence [26]. Systems quality is the measure of the portal itself and focuses on the outcome of the interaction between the user and the portal system. Items measuring system quality would include design, navigation, response time, system security, system availability and functionality [26]. Information quality is defined as a function of the value of the output produced by a system as perceived by the user [27]. Measures associated with information quality include content variety, complete information, detailed information, accurate information, timely information, reliable information, and appropriate format [26]. User satisfaction is defined as the degree to which users believe that the portal at their disposal fulfils their needs [28]. The model developed by Masrek [25] is adopted in this study.

2.3 Market Knowledge Sharing

Nowadays, the formation and use of new knowledge is necessary to the survival of businesses. Customer knowledge that has been gathered in an organization is of no use unless it is shared with those people who need

to know. According to Okyere-Kwakye and Khalil [29], knowledge sharing has been tagged as the key element within the organizations in the 21st century. Therefore, knowledge sharing has been given great attention by both academicians and practitioners [30]. They further argued that sharing of knowledge is not easy to implement due to the nature of knowledge. Therefore, employees should have the ability to share, collaborate with others to solve problems, develop new ideas or implement policies or procedures pertaining to sharing of knowledge.

To create knowledge sharing culture, organizations need to encourage employees to work together more effectively to collaborate and to share organizational knowledge more effectiveness, thus, can better perform their jobs [31]. According to Huang and Huang [32], effective knowledge sharing among members has become a competitive requirement for organizations. Therefore, the implementation of knowledge sharing among employees can improve an organization as a whole to meet its business objectives.

According to Kang, Kim and Chang [33], knowledge sharing is defined as the transmission or distribution of individual knowledge in an organization. Furthermore, individual members of an organization with different ideas, jobs and experiences will create new knowledge by communicating and sharing knowledge [33]. In relation to this, Haas and Hansen [34] mentioned that there are two distinct ways of transferring knowledge across organizations which are transferring knowledge between individuals and transferring knowledge through written documents.

Knowledge sharing is thought to be influenced by factors both at the individual and at the organizational level [35]. In addition, past research has identified individual and organizational factors as the antecedents of knowledge sharing. The antecedents of knowledge sharing can be identified by the following factors such as motivation to share, rewards, opportunities to share, culture and work environment [36], motivation [37], communication [38], trust between individuals [36,39]. A study conducted by Wahid, Zahari, Zakaria and Bakar [40] found that knowledge sharing has a positive influence on organizational performance. However, research by Ahmadi et al. [36] in Iranian bank found that trust, reward and information technology have a significant relationship whereby the organizational culture failed to support the influence of knowledge sharing to Iranian bank.

2.4 Organizational Performance

Measuring the performance of organization is very important as an indicator to achieve organization effectiveness. The literature on organizational performance shows that there is no single universal measure or common framework that can be used to assess overall organizational performance [41]. Similarly, Alkalha et al. [41] mentioned that it is difficult to measure organizational performance especially because what is measured changes continually.

Antony and Bhattachatyya [42] proposed organizational performance a construct that can be used to evaluate and assess the successfulness of organization to create and deliver values to its external and internal stakeholders. As the literature goes, many scholars and practitioners agree that organizational performance can be used as an indicator to evaluate how well an organization achieves its objectives and to assess the efficiency and effectiveness of goal achievement [43]. Venkatraman and Ramunajan [44] argued that organizational performance is an indicator, which can measure how well an enterprise achieves its own objectives. Those indicators are sale growth, company return on investment (ROI), company return on assets (ROA), market share, new product introduction and product quality. This study has adapted measurement of organizational performance developed by Venkatrman and Ramunajan [44].

The above discussion shows that there is a relationship between customer knowledge, knowledge sharing and the organizational performance. Hence, the hypotheses are as follows:

H1: Customer knowledge (CK) has positively influenced market knowledge management system (MKMS).

H2: Competitor knowledge (COK) has positively influenced market knowledge management system (MKMS)

H3: Supplier knowledge (SK) has positively influenced market knowledge management system (MKMS)

H4: Market knowledge management system (MKMS) positively affects market knowledge sharing (MKS)

H5: Market knowledge sharing (MKS) positively affects organizational performance (OP)

H6: Market knowledge management system (MKMS) and market knowledge sharing mediate between market knowledge

(MK) and organizational performance (OP).

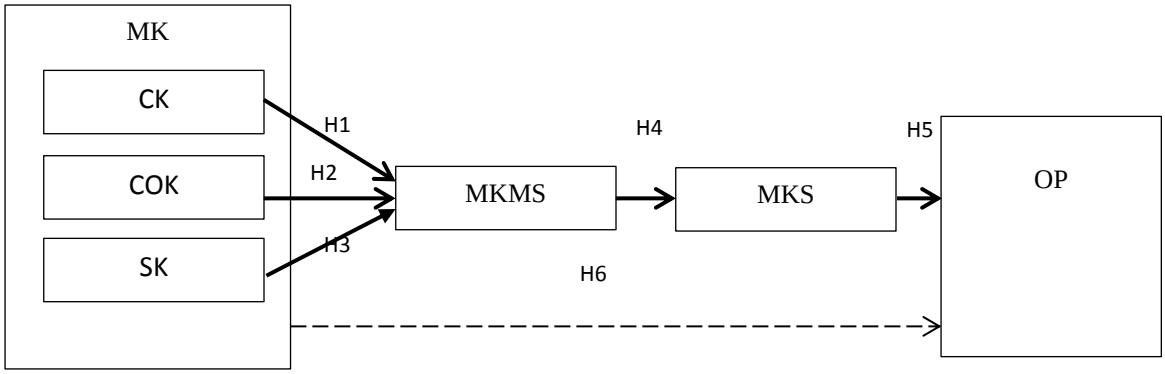

Fig. 1: Research Framework.

3 Research Methodology

This study utilized survey research. The questionnaires were used to collect data. A corresponding 5 Likert scale was deployed (1 for "Strongly Disagree"; 2 for "Disagree"; 3 for "Neither Agree nor Disagree"; 4 for "Agree" and 5 for "Strongly Agree"). Prior to pilot testing and main data collection, the questionnaires were pre-tested with several experts in the field and also several insurance companies who could become the prospective respondents. The questionnaires were pilot tested with 30 insurance companies. Using the Smart PLS, the responses of these 30 companies were analyzed for assessing the reliability of the measurements. The recorded Cronbach Alpha for all variables employing multi-items estimated range from 0.65 – 0.88 which suggests that the questionnaires were reliable [45].

The populations of the study were 416 Malaysian insurance companies listed in the National Innovation Agency of Thailand (NIA). There were 215 companies responded. However, only 209 questionnaires were valid for the data analysis. The remaining 209 were analyzed using Partial Least Square (SmartPLS version 3). This study will first develop and assess the measurement model and followed by the development and assessment of the structural model.

Previous studies have indicated a sample threshold of as little as 100 samples for PLS-SEM [46]. Alternatively, one can revert to the more restrictive minimum sample size recommended based on statistical power [47]. We used G*Power to calculate the sample size based on statistical power [48], suggesting that we needed a sample size of 138 for a statistical power of 0.95 for model testing. Since, our sample size exceeded 138, the power value in this study also exceeded 0.95. Moreover, the minimum power required in social and behavioral science research is typically 0.8. Therefore, in both cases, we can conclude that our sample size was acceptable for the purposes of this study.

4 Discussion

The respondents of the study were 209 Thai SMEs, the categories of companies consisted of 44.50% was eco-industry, 34.45% was design & solution and 21.05% was bio-technology. Most of the respondents were from central zone which was 74.16% followed from the south 8.61% and 7.18% was from the northeast and the north (6.70%). Most of the respondents (58.85%) were small companies which have less than 50 employees.

4.1 Common Method Variance (CMV)

Due to the self-reported nature of the data, there was a potential for common method variance (CMV), and so the Harman one-factor test was conducted to determine the extent of this. According to Podsakoff and Organ

[49], common method bias is problematic if a single latent factor would account for the majority of the explained variance. The un-rotated factor analysis showed that the first factor accounted for only 26% of the total 74% variance, and thus the common method bias was not a serious threat in the study.

4.2 Measurement Model

To examine the research model Partial Least Square (PLS) analysis technique was employed by using the SmartPLS 3 software version 3.2.8 [50]. In an effort to refine all structural equation models two stage analytical procedure was employed, where researchers tested the measurement model and structural model recommended by Hair, Sarstedt, Hopkins & Kuppelwieser [51]. Prior to structural modelling, the study has to assess the measurement model of latent construct for their dimensionality, validity, and reliability. Cronbach's (α) and composite reliability were also tested as recommended by Henseler, Ringle & Sarstedt [52].

The measurement model used in this study included five constructs: customer knowledge (CK), competitor knowledge (CoK), supplier knowledge (SK), market knowledge management system (MKMS), market knowledge sharing (MKS) and organizational performance (OP). In assessing a model's reliability, the loading of each indicator on its associated latent variable must be calculated and compared to a threshold. Generally, the loading should be higher than 0.7 for indicator reliability to be considered acceptable [47]. A loading lower than 0.4 indicates that an item should be considered for removal, and items with a loading of 0.4–0.7 should be considered for removal if they increase the composite reliability (CR) and Average Variance Extracted (AVE) above the threshold [47]. Table 1 indicates that most of the indicator loadings on their corresponding latent variables for the respondents were higher than 0.7.

4.3 Validity Assessment

Validity was assessed in terms of convergent validity and discriminant validity. Convergence validity is the extent to which the scale correlates positively with other measures of the same constructs [53]. Convergent validity of measurement model is usually ascertained by examining the factor loading, average variance extracted (AVE) and compost reliability (CR) [54]. All the values were above 0.6, shows the convergent validity of the model. Convergent validity can be evaluated by examining the loading (≥ 0.6), AVE ≥ 0.5, and CR ≥ 0.7 [55]. Each item's coefficients on its underlying construct were observed. A test of each item's coefficient was used to assess convergent validity. All values fulfil the required standard, indicating high convergence validity. Table 1 shows the results of factor loadings threshold level of 0.7 as recommended by Hair et al. [47].

Table 1: Factor loading, C.R. and AVE.

Constructs	Loading	C.R.	AVE
SK	0.807	0.872	0.631
OP	0.819	0.871	0.576
MKMS	0.838	0.889	0.666
MKS	0.878	0.924	0.803
COK	0.866	0.902	0.650
CK	0.799	0.882	0.713

Besides assessing the convergent validity, the study also evaluated the discriminant validity. Discriminant validity can be evaluated by examining Fornell-Larcker Criterion [56] and Heterotrait-Monotrait Ratio (HTMT)[52]. Fornell and Larcker [56] have suggested examining whether the square root of the AVE for each construct is greater than the correlation between the constructs. There are two ways of using HTMT to assess discriminant validity: (1) as a criterion or (2) as a statistical test. First, using HTMT as a criterion involves comparing it to a predefined threshold. If the value of HTMT is higher than this threshold, one can conclude that there is a lack of discriminant validity. Some authors suggest a threshold of 0.85 [45], whereas others propose a value of 0.90 [57]. Table 2 and table 3 show the results of the discriminant validity assessment of the measurement model using the Fornell–Larcker criterion and HTMT ratio and indicate that the models possess acceptable discriminant validity.

Table 2: Fornell and Larcker.

Constructs	CK	COK	MKS	MKMS	OP	SK
CK	**0.845**					
COK	0.503	**0.806**				
MKS	0.184	0.287	**0.896**			
MKMS	0.448	0.415	0.247	**0.816**		
OP	0.221	0.278	0589	0.158	**0.759**	
SK	0.602	0.450	0.205	0.435	0.220	**0.794**

Table 3: Heterotrait-Monotrait Ratio (HTMT).

Constructs	CK	COK	MKS	MKMS	OP	SK
CK						
COK	0.596					
MKS	0.206	0.317				
MKMS	0.508	0.453	0.263			
OP	0.267	0.337	0.652	0.186		
SK	0.735	0.534	0.258	0.492	0.268	

4.4 Structural Model

We performed bootstraping involved 5000 samples whislt our actual sample stood at 209. The SEM results are presented in Table 4 and Table 5. It can be observed that R2 values for MKMS is 0.276, suggesting that 27.6% of the variance in MKMS is explained by the customer knowledge (CK), competitor knowledge (CoK), and supplier knoweldge (SK). The MKMS construct in turn contributes to 6.1% of the variance in market knoweldge sharing (MKS) based on the R2 values of 0.061. Meanwhile MKS contributes to 34.7% of the variance in organizational performance (OP). Table 4 shows that all beta path coefficients were positive and in the expected direction and were statistically significant. To elaborate the significant effect of customer knowledge (CK) ($\beta = 0.214$, $p < 0.05$), competitor knowledge (CoK) ($\beta = 0.211$, $p < 0.05$), supplier knoweldge (SK) ($\beta = 0.213$, $p < 0.05$), market knowledge management system (MKMS) ($\beta = 0.274$, $p < 0.05$) and market knowledge sharing (MKS) ($\beta = 0.589$, $p < 0.05$). Thus H1, H2, H3, H4 and H5 are supported but H2 is not supported. The result also reveals that market knoweldge sharing (MKS) has a high impact, 34.7%, on organizational performance.

Table 4: Path coefficient and hypotheses testing (Direct Effect).

Hypotheses	R^2	Beta	S.D.	T Value	Decision	VIF	Q^2
H1:CK->MKMS	0.276	0.214	0.113	1.901	supported	1.756	0.037
H2:COK->MKMS		0.211	0.116	1.842	supported	1.402	
H3:SK->MKMS		0.213	0.105	2.015	supported	1.644	
H4:MKMS->MKS	0.061	0.247	0.104	2.372	supported	1.000	0.147
H5:MKS->OP	0.347	0.589	0.063	9.320	supported	1.000	0.171

Table 5: Indirect effect.

Path	Beta	S.D.	T Values	Decision
CK->MKMS->MKS	0.053	0.037	1.442	Not supported
COK->MKMS->MKS	0.053	0.040	1.313	Not supported
SK->MKMS->MKS	0.052	0.035	1.485	Not supported
CK->MKMS->KS->OP	0.031	0.022	1.397	Not supported
COK->MKMS->KS->OP	0.031	0.024	1.276	Not supported
SK->MKMS->KS->OP	0.031	0.022	1.381	Not supported
MKMS -> MKS -> OP	0.146	0.069	2.113	Supported

To test indirect effect, we employed Preacher and Hayes [58] bootstrapping method. First, we tested the indirect effect of CK, CoK and SK on MKS. The bootstrapping analysis revealed that the indirect effect of β=0.053 with t values of 1.442, β=0.053 with t values of 1.313 and β=0.052 with t values of 1.485 respectively (Table 5). We found that there is not a mediating effect of MKMS between market knowledge and market knowledge sharing (MKS) given that the indirect effects with t values less than 1.645. Based on the above result we can conclude that the mediation effect of MKMS and MKS on the relationship between market knowledge (MK) and OP is statistically insignificant. Thus, H5 is unsupported. However, market knowledge sharing has a mediating effect between market knowledge management system (MKMS) and organizational performance (OP).

We evaluated for multicollinearity among the variables in our model, and did not find any cause for concern using the criteria of variance inflation factor (VIF), which were (Table 4) all below the suggested value of 5.00 [47]. Finally, we also assessed the predictive relevance of the model through the blindfolding procedure (Table 4) as suggested by Hair et al. [47]. The Q2 values for market knowledge sharing (MKS) (Q2 = 0.037), market knowledge management system (MKMS) (Q2 = 0.147) and organizational performance (OP) (Q2 = 0.171) are > 0, suggesting that the model has sufficient predictive relevance.

5 Conclusion

The study found that market knowledge sharing becomes an important factor to organizational performance. Knowledge sharing practices are extremely important in keeping and enhancing gained valuable intellectual capital and therefore organizational success. Hence, the identification of influencing factors and the outcomes of these practices is necessary. Information technology is an important factor for establishing a knowledge sharing platform. Supportive technical environment increases the collaboration among the people [59]. Knowledge Management Systems (KMS) (a type of information systems) are supportive technologic knowledge sharing instruments. A flexible corporate infrastructure is necessary for enterprise-based knowledge management systems for instant, ad hoc and intensive collaborations (Liu et al, 2005). Furthermore, KMS is recommended as an enabler for KMS use in increasing knowledge sharing.

The result from the Importance-Performance Matrix Analysis (IPMA) shows that market knowledge sharing has high importance and high performance compared to market knowledge management system and market knowledge. The finding of this study is supported by the research conducted by Wang and Noe [60] in which knowledge sharing is suggested as a fundamental knowledge centered activity through which employees can mutually exchange their knowledge and contribute to knowledge application and ultimately the competitive advantage of the organization.

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