FACTORS INFLUENCING SUSTAINABLE PROCUREMENT PRACTICES IN THE MALAYSIAN MANUFACTURING FIRM

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ABSTRACT

The attention of supply chain researchers is ushering on the area of sustainable procurement since the start of this century. Therefore, this study urges to recognise the influencing factors of the implementation of sustainable procurement (SP) practices in the manufacturing firms. For the purpose of investigation, an online field questionnaire was established through the existing literature on green procurement. This survey was sent to 170 manufacturing firms in Malaysia. The recorded responses were analysed using the Statistical Package for the Social Sciences (SPSS). The findings reveal that regulatory pressure and customer pressure are the main elements encouraging the SP practices. Specifically, the regulatory pressure has the highest level of impact on SP practices. This paper contributes the instrumental insights in SP amongst manufacturing firms. Moreover, it also adds the extensive literature in the field of sustainable procurement which is inadequately explored.

Keywords: Procurement, Sustainable Procurement, Supply Chain Management.

1. INTRODUCTION

"Procurement is the process by which companies acquire raw materials, components, products, services or other resources to execute their operations" (Chopra et al., 2010, p. 460). Traditional procurement mainly aim attention on three criteria which are: i) cost; ii) quality; and iii) delivery. Sustainable procurement (SP), is an approach to achieve sustainability because it also takes environmental factor in consideration, in decisions of supply chain management (Yook et al., 2017; Zailani et al., 2012). Sustainable procurement is also known as "environmentally-conscious purchasing practice that reduces sources of waste and promotes recycling and reclamation of purchased material without adversely affecting performance requirement of such materials" Min and Galle, 2001,p. 1222). SP has gotten a significant consideration in the business and the scholarly world, mainly due to the need for hindering further environmental change so that our fast depleting natural resources are preserved. Along these lines, businesses and industries need to play an important role to reduce harmful gas emissions that have impacted the environment. Nowadays, environmental considerations should become one of the basic elements in the operations. As the businesses are normally focused on the profit maximisation, the primary determinant to continue a

business should be changed to achieve sustainability. In order to achieve sustainability, the whole process of supply chain management should be sustainable. Procurement and supply chain management is the focal point which leads to the route of sustainability. In this research world, there is a growth of studies regarding sustainability which focuses on procurement and supply chain management, such as ethical sourcing (Preuss, 2009; Roberts, 2003), corporate social responsibility in the supply chain (Faisal, 2010; Maloni and Brown, 2006), socially responsible buying (Maignan et al., 2002; Park and Stoel, 2005) and green supply chains (Kainuma and Tawara, 2006; Mollenkopf et al., 2010). These researches show that further advancement has been made regarding the procurement and supply chain management (Linton et al., 2007). As a responsible researcher, we should continue discovering and spread awareness on SP. Recently, there has been an increase in pressure on the public and private organisation to execute SP into practices. The primary focus of SP is on life cycle assessment (LCA). LCA measures the environmental impact associated from the process of extracting raw material to using the product and ultimately disposing at the end of its life (Heizer et al., 2017; Karna and Heiskanen, 1998). At the stage of raw material to a disposal, the effect of the product in terms of harmful gas emission can be reduced by the application of 3Rs which is reduce, reuse and recycle (Heizer et al., 2017). The main role to achieve sustainability in industries can be played by the procurement managers. The procurement decisions would be made by the procurement managers which enable them to select products that give the least impact on the environment. Procurement managers person in charge has the power to adopt a resource reduction activity (Porter and van der Linde, 1995). Gradually, firms are adopting better environmental practices throughout their organisations and supply chains (Green et al., 2012). Procurement managers are also capable to replace the harmful materials to an environmentally friendly material (Carter and Carter, 1998). This role enables the procurement manager to be socially responsible to the firm as well as to the environment. Environmental initiatives can be initiated in order to influence the firm and environment in a positive way (Carter et al., 2000). A responsible procurement manager will directly influence the organisation to equally fulfill the requirement of socially responsible (Zsidisin and Siferd, 2001). This research provides a huge contribution to the world of academia and industries. First and foremost, it can possibly become the benchmark of one of the few empirical studies which are conducted in Malaysia. Researchers will be able to make this paper as a reference in order to authenticate and strengthen their findings of research work by analysing the various drivers on the implementation of SP initiatives in Malaysian manufacturing firms. Researchers have argued that carrying out the previous study in a different setting using different data set adds value to the quality of research in operations management (Singhal et al., 2008).Subsequently, the current researches comprehensively investigate the impact of SP on financial, operational, environmental, social and market-related performances. A limited number of studies have investigated the impact of SP practices on economic conditions (Yook et al., 2017).Next, this work adds value to the scant literatures of SP practices in Malaysian manufacturing firms. Hsu et al.'s (2013) and Mohanty and Prakash's (2014) identified that the researches on supply chain initiatives in emerging economies and environmental impact are insufficient. Mansi's (2015) also determined that there are limited existing literature on sustainable procurement studies in developing or underdeveloped countries including the Asian region.

Based on the literature review, this study aims to answer the following research questions:

Research Question 1. What are the motivators that may affect the implementation of SP practices in Malaysian manufacturing firm?

Research Question 2. Which of the motivator has the highest level of influence in SP implementation?

2. LITERATURE REVIEW

2.1 Sustainable supply chain management (SSCM) and sustainable procurement (SP)

SSCM encourages to consider environmental factors into the ongoing process of supply chain management (SCM), from the initial stage of acquiring raw materials to the end of product useful life (Soda et al., 2016; Srivastava, 2007; Zsidisin and Siferd, 2001). It has also been discussed that the SSCM practices consist of sustainable procurement; design for environment; and reverse logistics (Hsu et al., 2013). Sustainable procurement requires procuring products from the suppliers which use sustainable materials such as non-toxic, reusable and recyclable; encourages waste reduction and minimisation of hazardous materials (Zhu et al., 2007; Hsu et al., 2013). Furthermore, SSCM is classified as a recent idea which is emerging in the research circles (Lee et al., 2012; Zhu et al., 2013; Soda et al., 2016). The process of SSCM involves the two most significant activities which are known as selection and procurement. Due to that, SP gains attention from industries and academicians.

2.2 Motivators for SP in supply chains

The word motivators can be represented as drivers which 'tells and sells' the business entities to implement SP practices (ElTayeb et al., 2010). Previous literature has divided the motivators into two main division: i) internal and ii) external. The "internal motivators" comprises the full support from lower, middle and top management within the organisation. There are equal importance of awareness through the three levels of the organisation regarding the harmful impacts of products affecting environment negatively. For instance, nature of business, organisation culture as well as social responsibility. Subsequently, the "external motivators" involves the outer issue such government regulations, customer expectations, expected business benefits, supplier integration, competitive advantage, competitive pressure as well as societal pressure (Walker et al., 2008). Previous studies reported that external motivators have more influence compared to internal motivators (Walker et al., 2008). Numerous studies have been done in the Asian countries on SP motivators. Even though there were various research outcomes, there are five common motivators that have appeared from those researches (Ageron et al., 2012; Yen and Yen, 2012; Hsu et al., 2013; Ramakrishnan et al., 2015). The five common motivators that are used in this research paper are identified as i) supplier collaboration; ii) customer pressure; iii) regulatory pressure; iv) competitive advantage and v) top management support.

2.2.1 Supplier Collaboration

Collaboration with suppliers is receiving attention in environmental issues by screening and evaluating suppliers in the SP implementation (Handfield et al. 2002; Humphreys et al. 2003; Koplin et al. 2007; Rao & Holt, 2005). Supplier selection and collaboration is one of the procedure that promotes sustainability and environmental performance of an organisation. This procedure makes certain that toxic or unsustainable materials are not being purchased and directly parallel with the organisation environmental status (Zsidisin and Siferd, 2001). Therefore, this research hypothesises that:

H1: Supplier collaboration has a positive and significant relationship with the implementation of sustainable procurement practices

2.2.2 Customer Pressure

Researches has discussed that customer pressure is considered as the most salient determinant that enhance the tendency of a firm to implement SP practices (Buysse & Verbeke, 2003; Gonzalez-Benito, 2006). As a significant stakeholder, customers are the one who demands

for a particular or specialised product.Thus, the organisation has to take in customer's consideration and make changes for their satisfaction (ElTayeb et al. 2009). This circumstances show that customers demonstrates market pressures onto their suppliers that promotes the implementation of SP practices (Hall, 2000).
Therefore, this research hypothesises that:
H2: Customer pressures have a positive and significant relationship with the implementation of sustainable procurement practices

2.2.3 Regulatory Pressures

Regulatory pressures also plays an important role in influencing the implementation of SP practices (Holt & Ghobadian, 2003). An organisation would of course implement SP practices if it is being encouraged by the government bodies on environmental rules and regulations (ElTayeb et al. 2009). The role of government by enforcing strict regulations to be complied by firms encourage SP practices in resolving environmental issues is becoming more and more important, which is widely recognized by academics (Simpson, et al. 2007). Environmental regulation results in improved environmental procedures and green practices (Williamson et al. 2006). This is also similar to the study done by Palmer (2000), where government regulations is seen as the 'main driving force for firms to adopt SP, to enhance towards environmental improvement'. Therefore, this research hypothesises that:
H3: Government regulations have a positive and significant relationship with the implementation of sustainable procurement practices

2.2.4 Competitive Advantage

Generally, it is known that the main objective of an organisation are to maximise the profit and return on investments. Some organisation hesitate to implement SP practices due to involvement of a high cost and risk (Min & Galle, 2001; Preuss, 2001; Rao, 2006). Whereas, some organisation who forecast the involvement in cost and profit in a long run only are keen to implement SP activities. These shows the reason that an organisation would be choosing to implement SP only if there are high expectation of return on investment (Hussain, 1999). These researches shows that competitive advantage has a significant effect on SP implementation among business organization. Therefore, this research hypothesises that:
H4: Competitive advantage has a positive and significant relationship with the implementation of sustainable procurement practices

2.2.5 Top Management Support

One of an important determinant towards implementation of SP is top management support (Lin & Ho, 2011). Top management here consist of senior managers and Chief Executive Officers (CEOs) in an organisation (Holt & Ghobadian, 2009; Hsu & Hu, 2008). They provide guidance and act as a leader which holds an important position to influence the subordinates in application of SP and environmental practices (Griffin et al. 2004; Rojšek, 2001). A successful support from top management ensures the success in environmental management activities (Rice, 2003; Zsidisin & Siferd, 2001). Commitment from the top management has a significant positive impacts on the environmental collaboration with suppliers and demonstrates that top management support influences firm towards SP implementation (Yen & Yen, 2012). Therefore, this research hypothesises that
H5: Top management support has a positive and significant relationship with the implementation of sustainable procurement practices

2.3 The relationship between SP practices and organisation performance

The significance of carrying out research on SP practices is due to the fact that it enhances the organisational performance together by creating an environmental friendly world (Islam et.al, 2017; Surajit, 2012). There were few arguments that SP practices might reduce the profit of an organisation due to the high cost. Nevertheless, this arguments were disagreed by few researchers who claimed that SP practices increase the profit of an organisation in a long run (Carter et al., 2000; Chouinard et al., 2011). Previous studies stated that SP practices lead to a good financial performance (Klassen and McLaughlin, 1996). Carter et al. (2000) studied the effect of environmental purchasing on firm performance. Using survey and archival data they showed that environmental purchasing is significantly related to firm performance. Melnyk et al. (2003) demonstrated in their research that firms having formal environmental management systems (ISO 14000 certified) have strong positive linkages with multiple dimensions of operational performance. Zhu and Sarkis (2004) found adoption of GP practices improves environmental and financial performance. Zhu et al. (2010) categorized performance into three types: environmental, financial and operational. They reported SP has a significant link with financial performance. Hoejmose and Adrien-Kirby (2012) studied the literature published between 2000 and 2010 in the field of socially and environmentally responsible procurement (SERP) and noted four themes: external environment, internal environment, SERP and firm performance. They observed a sequential link, i.e., drivers influence SERP, which then affects firm performance. Chan et al.'s (2012) work reinforced the findings of other researchers that GSCM activities that include green purchase significantly and positively impacts corporate performance. Another study focused on the effects of environmental purchasing on four variables: operational, economic, environmental and social aspects. Yook et al. (2017) studied 239 Japanese firms and found dynamic and operational SP capabilities positively influencing environmental and economic performances. Vijayvargy et al.'s (2017) work on 161 Indian firms revealed that SSCM adoption leads to improvements in operational performance. The most recent work by Al-Ghwayeen and Abdallah (2018) on 221 manufacturing firms reported that SSCM positively and significantly affects environmental and export performance. On a similar note, another recent study mentioned that implementation of environmental management practices lead to superior operational and environmental performances (Famiyeh et al., 2018). However, most prior studies have primarily focused on few categories of GP performance such as either financial, or environmental, or operational, or two or three categories together. Thus, it remains inconclusive what constitutes "performance" clearly attributable to GP. The present study extends prior work by accommodating five key variables of performance: financial, operational, environmental, social and market-related.

2.4 Theoretical research framework

The theoretical framework for this research was developed through previous studies of SP. This theoretical framework provides a holistic view on the internal and external motivators affecting the organisation performance through the implementation of SP.

Based on the theoretical framework, the following hypotheses were proposed:

H1. Supplier collaboration has a positive and significant relationship with the implementation of sustainable procurement practices.

H2. Customer pressure has a positive and significant relationship with the implementation of sustainable procurement practices.

H3. Regulatory pressure has a positive and significant relationship with the implementation of sustainable procurement practices.

H4 Competitive advantage has a positive and significant relationship with the implementation of sustainable procurement practices.
H5. Top management support has a positive and significant relationship with the implementation of sustainable procurement practices.

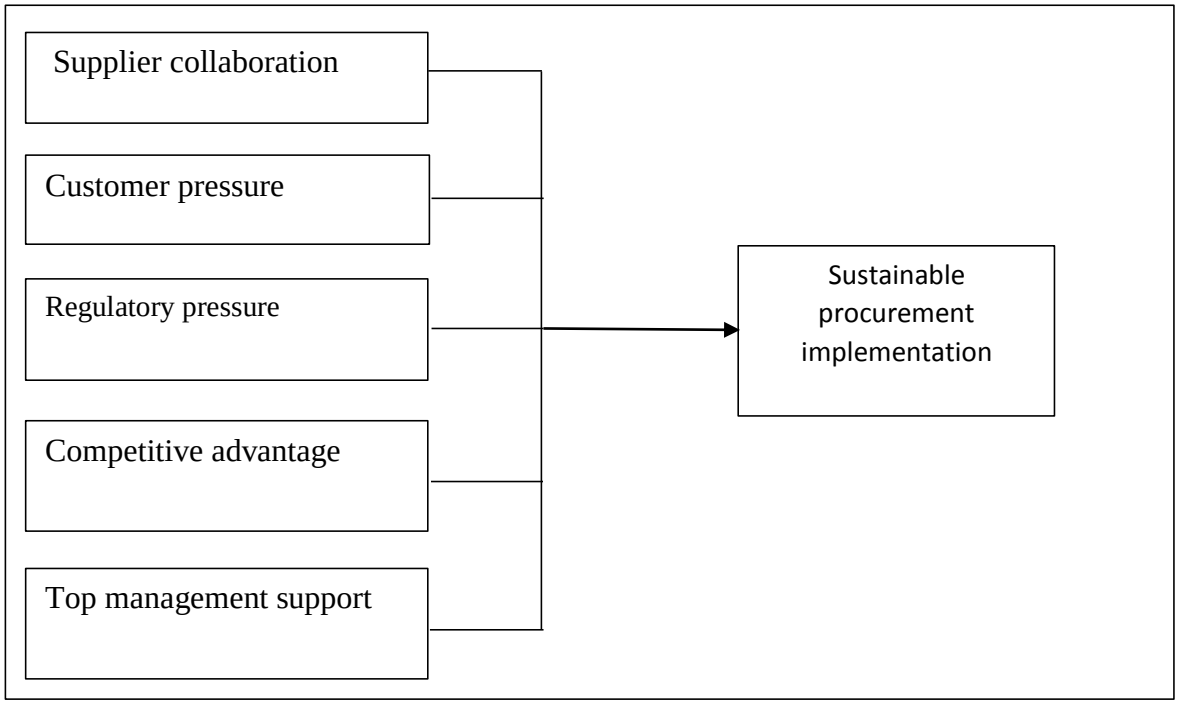

Figure 1. Theoretical Framework

3. RESEARCH METHODOLOGY

3.1 Process flow diagram

Figure 2 shows the process of research methodology applied in this research. This process is used to identify the motivators of SP in Johor manufacturing firm. The literature review were done according to SP motivators as well as its relationship with firm. Subsequently, hypotheses were proposed for the research. The research methodology was formulated. The questionnaire was validated for the survey, and data collection has been done. The collected data is analysed in order to determine how the motivators affect the implementation of SP. The hypothesis is made and reported.

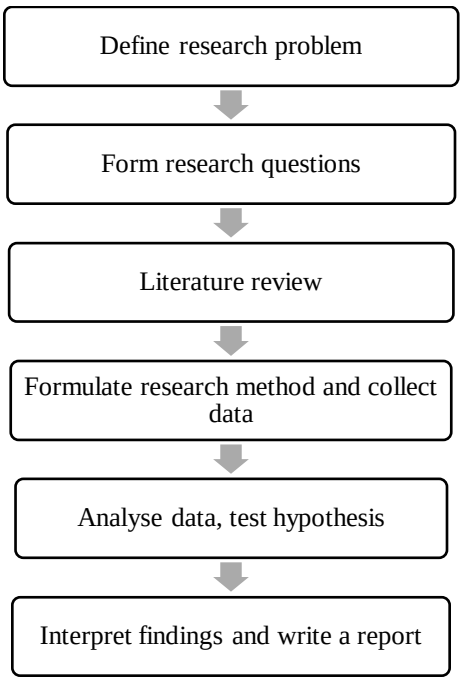

Figure 2. Process of research methodology

3.2 Questionnaire

The questionnaire was developed in Google Drive using Google Forms. The questionnaire was adapted from the previous researches on SSCM and SP (Giminez and Tachizawa, 2012; Zailani et al., 2012; Baguette, 2009; ElTayeb et al. 2009; Rao & Holt, 2005; Handfield et al., 2002; Zsidisin and Siferd, 2001). The research instrument was validated by four academicians expert in sustainability and SP for face and content validity. According to their suggestion, the research instrument were modified and used 45 questions. 21 questions were developed using a five-point Likert scale for the motivators (supplier collaboration, customer pressure, regulatory pressure, competitive advantage, top management support) of GP. Five questions pertained to supplier collaboration,five questions estimated the customer pressure, four questions gauged regulatory pressure, three questions corresponded to regulatory pressure, three questions were designed to measure competitive advantage and the remaining four questions determined thetop management support. The five point likert scale were coded as 1 (“Strongly Disagree”), 2 (“Disagree”), 3 (“Neutral”), 4 (“Agree”) and 5 (“Strongly Agree”). The collected data was analyzed using Statistical Package for the Social Sciences (SPSS) software where selected variables are subject to statistical analysis for data analysis.

The questionnaires were sent to 170 ISO 14001 certified manufacturing firm that is registered under the Federation of Manufacturing Malaysia (FMM) 2017. This is because the organisation which has EMS rules and regulations would embark more on SP practices.Therefore, the research objective will be achieved specifically. The total population of IS0 14001 certified manufacturing firm under the FMM 2017 was 170 manufacturing firm, and the questionnaires were sent to 170 manufacturing firm. The research questionnaire was emailed in this study because it is more likely to receive the response from a geographically dispersed sample, ISO 14001 certified manufacturing firm which are located throughout Malaysia in less time and with reduced costs (Sekaran, 2003). The procurement managers are the targeted respondents of this study because they handle procurement processes and procedures.

4. DATA ANALYSIS AND RESULTS

4.1 Multiple Linear Regression

The approach used to test the relationship between motivators and SP implementation was multiple linear regression. All of the five independent variables were entered simultaneously into the analysis. Table 1 shows the model summary of multiple linear regression analysis. The findings indicate that the multiple correlation coefficient (R) turn out to be 0.634 (R^2= 0.425). The adjusted R^2 is shown to be 0.376. This results illustrates that overall variance explained by the five motivators was 43%.

Table 1. Model Summary of Multiple Regression Analysis

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.634	.425	.376	7.89599

In order to determine the hypothesis, the most relevant value to be observed are the β coefficient value as well as the significance value of p. Subsequently, Table 2 shows the β coefficient and significance p value.

Table 2. Multiple linear regression result of motivators and sustainable procurement practices

Variable	Dependent Variable: Sustainable Procurement implementation (Model 1)	
	(β)	(p)
Supplier collaboration	0.174	0.767
Customer pressure	0.332	0.011**
Regulatory pressure	0.347	0.001**
Competitive advantage	0.024	0.864
Top management support	0.118	0.755

Notes: *p < 0.05 (5%), **p < 0.01 (1%), ***p < 0.001 (0.1%).

According to Table 2, the results indicates that customer pressure and regulatory pressure were found to have positively significant relationship towards the implementation of sustainable procurement practices by manufacturing firm in Malaysia. Regulatory pressure has β value of 0.347 and a p value of 0.001 whereas customer pressure has the β value of 0.332 and a p value of 0.011. Therefore, H_2 and H_3 were supported by the regression model and are fail to be rejected in this study. Overall, the most positively related motivator to the implementation of SP is regulatory pressure. It has the β value of 0.347 and p value of 0.001. Other independent variables such as supplier collaboration, with β = 0.174, p= 0.767, competitive advantage with β = 0.024, p=0.864, top management support, with β= 0.118, p=0.755 shows a positive and insignificant relationship with sustainable procurement implementation by manufacturing firm in Malaysia. Thus, hypotheses H_1, H_4 and H_5 were not supported by model 1 and were rejected in this study.

Table 3. Hypotheses Results

Hypotheses	Statement of Hypotheses	Results
H1	Supplier collaboration has a positive and significant relationship with SP implementation.	Rejected

H2	Customer pressure is positively related to SP implementation.	Fail to be rejected
H3	Regulatory pressure is positively related to SP implementation.	Fail to be rejected
H4	Competitive advantage is positively related to SP implementation.	Rejected
H5	Top management support is positively related to SP implementation.	Rejected

5. IMPLICATIONS

Currently, the sustainable procurement practices among the manufacturing firm in Malaysia still a moderate and emerging concept (Seman et.al, 2012; Wooi & Zailani,2010; Green Purchasing Network Malaysia, 2003). Based on the results, it is noted that regulatory pressure and customer pressures were positively significant towards sustainable procurement implementation. On the other hand, supplier collaboration, competitive advantage and top management support were positively insignificant towards sustainable procurement implementation. The manufacturing firm can enhance their environmental based activities through the result from this study. According to the outcome of this research, it is known that the manufacturing firm should continue following the government's initiatives complying to the environmental standards. Manufacturing firm which has more support from government and customers tend to participate more on sustainable procurement practices. In addition, these manufacturing firm may increase the awareness of employee together with the top management through training and development. Stakeholders of the firm should also be involved in the environmental concerns so that the firm would be socially responsible and start to apply sustainable procurement practices. Management of each firm should launch various awareness programs organization-wide about the benefits of GP and facilitate adoption of GP practices to a greater extent. Finally, the finding of this research refutes the traditional perception held by some business leaders that involvement in GSCM activities that includes GP would actually increase the manufacturing cost, and thereby, reduce profit and competitiveness (Yook et al., 2017; Chouinard et al., 2011; Carter et al., 2000).

6. CONCLUSION

The current study gives insight to practitioners especially procurement managers in the manufacturing firm, to be mindful of motivators that trigger SP implementation in Malaysia. This study goes parallel to is in-line with the practice of sustainable procurement among manufacturing firm in Malaysia which is considered as a back bone of our country where they contribute economic performance of our country (Green Purchasing Network Malaysia, 2003; Eleventh Malaysia Plan, 2016). The research findings fulfilled the research objectives and answered the research questions of this study. The level of SP implementation among manufacturing firm in Malaysia is still low as the motivators such as government regulations and customer pressures influencing SP implementation. Other motivators such as supplier collaboration, competitive advantage and top management support does not influence the SP implementation. This proves that the internal management of manufacturing firm is weak and they would only embark on sustainable practices when they receive a great pressure from motivators. The top management commitment and the level of environmental awareness are still low, which caused the internal management towards green practices still lack among manufacturing firm. Furthermore, manufacturing firm perceive societal responsibility would minimize the profit of their business. This attitude should be polished where

the firm should strengthen their commitment and responsibility in practicing green initiatives and giving societal concerns in their business processes.

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