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Relationship between Organizational Capabilities, Implementation Decision on Target Costing and Organisational Performance: An Empirical Study of Malaysian Automotive Industry

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ABSTRACT

Target Costing (TC) is seen to be related to more than product cost reduction. It also includes product quality, functionality and lead time that, to a similar extent, should be seriously considered. Organisational capabilities (OCs), as a contextual variable, could affect organisational functions when, in the study assumption, it is supported by the balanced scorecard (BSC) model in relation to TC objectives. This study examines the relationship between OCs factors, decision on TC implementation and organisational performance in association with company strategy and industry type effectiveness in the Malaysian automotive industry. A questionnaire survey was used to collect data. In total, 515 questionnaires were distributed, while 201 questionnaires were collected. Of the number collected, 176 fully completed ones were used. The results revealed that all three levels of OCs, local, architectural and process capabilities, significantly reflected the OCs, which were found to be positive and significantly influencing the decision on TC implementation. Company strategy had a significant moderating effect on the causal relationship between OCs and the decision on TC implementation. There was a significant invariant between car makers and part and component makers in the local and architectural capabilities, but not in the process capabilities. The study has extended the TC literature in adopting BSC for measuring identified variables using

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Rasch Model outputs as inputs for SEM analysis and providing evidence on TC implementation and OCs in the Malaysian context.

Keywords: Target costing, organisational capabilities, organisational performance, automotive industry, company strategy, industry type

INTRODUCTION

In the last few years, with rapid changes in customers' expectations and more diversity of products, organisations have been endeavouring to implement effective management accounting and control systems for product costs while not sacrificing other features such as quality, functionality and lead time. Adopting target costing (TC) was mainly initiated as a cost management technique for drastically managing product features of cost, quality and functionality. Thus, TC is a management-based philosophy proposed globally by companies as one of the means that companies can adopt to ensure product competitiveness in terms of design, development and cost. It has been described in the literature as a multi-disciplinary technique used for managing product costs by individual effort shared across organisational functions (Hamood et al., 2013; Sulaiman et al., 2013). Many studies have reported that the most important benefit of the TC technique is assisting companies in making a trade-off between cost, quality and functionality (e.g. Ax et al., 2008; Cooper & Slagmulder, 1997, 1999; Cooper, 1995; Kato, 1993). This could definitely create a need to radically change their organisational capabilities (OCs) for TC to be successfully implemented. Accordingly, the decision to implement TC is often linked to a firm's OCs, and this in turn influences the firm's decision to determine product price, cost and structure. Therefore, the best practice of TC could depend on the OCs, where organisational functions are combined with cross-functional teams.

However, a few studies have been published on OCs and TC implementation (e.g. Camuffo & Volpato, 1996; Huh et al., 2008; Lee et al., 2002), and studies focussing on TC implementation in the Malaysian context are almost non-existent, initially creating a motive for conducting this study. According to Huh et al. (2008), the OCs are considered a success factor for TC performance in Japanese companies. However, the lack of a comprehensive list of measures in the literature for OCs including financial and non-financial measures in order to achieve the right balance among TC objectives provided another motive for this study. Since the most important benefit of TC is assisting companies in making a trade-off between cost, quality and functionality, the balance between these objectives is practically aggressive. Based on Souissi and Ito (2004) and Yilmaz and Baral (2010), TC and BSC, in some contexts, work in the same direction, focussing on customers' satisfaction in achieving financial objectives through effective processes and strategic plans. This could definitely create a need for using BSC perspectives to radically assess OCs when implementing TC. On the other hand, company strategy employed and type of product produced could determine the OCs needed for TC success, but this has not been addressed in the literature. To address these concerns, the current study examined the relationship between OCs and TC implementation in the Malaysian automotive industry in association with company strategy and industry type effectiveness. The study also further examined the extended effect of TC implementation on organisational performance. The remainder of the paper is organised as follows: Section 2 critically reviews previous studies pertaining to TC implementation and OCs and develops the hypotheses. The research methods employed in the study are presented in Section 3. Following this, survey results are presented in Section 4 and consequently discussed in Section 5. Finally, the study is concluded in Section 6.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Target costing (TC) was initially developed by TOYOTA in the beginning of the 1960s and has been used since then by the Japanese automotive industry (Afonso et al., 2008). It was mainly developed as a cost management and control technique to manage and control product features such as cost, quality and functionality at the earlier stages of a product's life-cycle. Kato (1993) stressed that the "…target costing is not a simple cost-reduction technique, but a complete strategic profit management system." This is supported by Cooper and Slagmulder's (1997) claim that the term for this concept should be 'cost management' and not 'cost reduction'. However, many studies have reported that the most important benefit of TC is to assist companies in making a trade-off between cost, quality and functionality (e.g. Ax et al., 2008; Cooper & Slagmulder, 1997, 1999; Cooper, 1995; Hamood et al., 2013; Juhmani, 2010; Kato, 1993; Zengin & Ada, 2010). Cooper (1995), in a study of Japanese companies implementing TC, came up with a framework called the Survival Triplet, which encompasses the three dimensions of cost, quality and functionality. According to Cooper, organisations should ensure a minimum on the three levels if they want to compete in today's tough market. Since all these three elements are extremely important, Souissi and Ito (2004) extended Cooper's Survival Triplet framework to include another important element (lead time) and merged quality and functionality into one element (marketability). However, the concepts of quality, functionality and lead time have not been adequately addressed in the current literature as they have been defined from a narrower idea using simplistic non-financial measures. Some researchers have found that the reason for a lower adoption of TC is that it results in a lower quality as the product has to become cheaper (Juhmani, 2010; Kocsoy et al., 2008; Rattray et al., 2007). Instead, product quality, functionality and lead time should be taken into account on a broader basis, including measures that can contribute to enhancing these objectives when achieving cost reduction. This requires organisations to effectively maximise their capabilities and infrastructure throughout their value chain. Many relevant studies (e.g. Huh et al., 2008; Joshi, 2001; Kocsoy, 2008; Swenson et al., 2005) have asserted that the OCs have been recognised as the most important factor for the success of TC implementation.

In the Malaysian context, especially with highly increasing competition among automotive industries, recent management accounting techniques such as TC, should be applied. Nevertheless, relevant studies (e.g. Omar et al., 2002; Mahfar & Omar, 2004; Ramli et al., 2013; Sulaiman et al., 2005) explored a minimal or non-utilisation of TC technique, as an advanced management accounting technique within the selected companies. Some authors suggest that the utilisation of such a technique is very important for stressing value creation, and this could be achieved if the qualified management accountants increased their efforts in promoting this technique in their organisation. Others comment that the motivation for adopting TC was to meet customers' requirements, whereas the attributes contributing to non-adoption of TC was the fact that it was cost inefficient and time consuming. Hence, there is a support to say that the expectation of implementing TC as a new management accounting technique was either low or slow. Accordingly, there is a need for changing their OCs in tandem with their strategy for implementing TC successfully. Recently, Baharudin and Jusoh (2015) reported that there was a strong tendency to implement target costing management (TCM) to ensure products' profitability by managing product cost during the design stage. Their case study explored how TCM is being practised in Malaysian automotive companies as well as how it can be used to detect the major factors influencing the design of TCM implementation processes, including customer orientation, information availability and supplier relationship.

Implementation Decision on Target Costing and Organisational Capabilities

Organisational capabilities (OCs) have been considered in the literature as capabilities of an organisation for considering both internal and external competencies in addressing environmental changes as sources of sustained competitive advantage (Huh et al., 2008). According to Swenson et al. (2005), organisations should evaluate three areas to determine their readiness to implement TC. These include: (1) the organisation's culture and infrastructure, (2) TC principles and (3) procedures and tools needed to support TC implementation. Huh et al. (2008) considered the concept of OCs as a success factor of TC performance as dynamic capabilities accumulated through the multi-levels of knowledge within the organisation. These capabilities include top management leadership, team-orientation, team-commitment, mutual trust between managers and employees, management accounting structure, employee education and information network with customers and suppliers. Their study examined the relationship between these capabilities and the performance of TC among Japanese companies. They classified these capabilities into three groups: local capabilities, architectural capabilities and process capabilities based on the model proposed by Kusunoki et al. (1995). They reported that the reason for focussing on the OCs influencing TC implementation was that TC is a dynamic system that connects different tools and techniques, and these capabilities show different aspects of knowledge accumulated within the organisation. In extending this argument, organisations when deciding to implement TC need to build and reconfigure resources to remain competitive in a rapidly changing environment (Teece, 2007). However, despite much attention being given to addressing the influence of OCs on the successful implementation of TC, few studies have been published concerning TC and OCs in general, and the empirical study of Huh et al. (2008) only investigated the nature of OCs and their relationship with TC performance. In addition, the definitive measurement of OCs is still simplistic, while the dimension(s) used to represent OCs as success factors for TC implementation has been either financial or non-financial variables. Instead, product quality, functionality and lead time should be ensured in reducing cost from a broader balance including both financial and non-financial measures of OCs, resulting in conclusive results. In this regard, the balanced scorecard (BSC) has been widely accepted by many organisations as a system that integrates financial and non-financial measures in evaluating organisational performance from four perspectives: financial, customer, internal process and learning and growth (Jusoh & Parnell, 2008; Sulaiman et al., 2013). As TC has been mainly used to reduce product cost as a financial objective while not sacrificing other non-financial objectives, product quality, functionality, lead time and the balance between these elements is crucial for making sure that a company is moving towards its strategic objectives. Based on Souissi and Ito (2004) and Yilmaz and Baral (2010), the TC has some similarities to the BSC system, as both focus on customers for improving financial performance. In the study assumption, applying the BSC's four perspectives to measure OCs could lead to the right balance among TC dimensions: financial (cost reduction) and non-financial (quality, functionality and lead time). Thus, there is a need to address whether the OCs adapted from Huh et al. (2008) and measured by BSC perspectives could influence the successful implementation of TC. The following hypothesis was proposed:

H1: OC levels affect the decision on TC implementation.

Company Strategy

Many studies have affirmed that the success of TC implementation depends on the company strategy that determines the organisational structure (e.g. Cooper & Slagmulder, 1997; Kato, 1993; Tani, 1994, 1995). Recently, the only study found in TC literature investigating the moderating effect of company strategy was that conducted by Hibbets et al. (2003). Unlike the current study, their study examined the moderating effect of company strategy on the relationship between the commutative environment and the decision made to adopt TC. Hence, in the current study, the influence of OCs on the decision made on TC implementation was likely to be affected by the company strategy followed. However, the structural moderation of the company strategy included three types of strategy, cost leadership, differentiation and confrontation, as outlined by Hibbets et al. (2003). According to Cooper (1995), confrontation as a strategy is more suitable for successful implementation of TC. He pointed out the need for a company, in order to compete successfully, to confront its products in three key elements: price, quality and functionality. Meanwhile, Hibbets et al. (2003) revealed that the confrontation strategy was more likely for TC implementation than other competitive strategies (cost leadership and differentiation strategies) among US and German companies adopting TC. Therefore, it is interesting to determine in which strategy the effect of OCs on decision on TC implementation is more pronounced if the moderation were already established. Based on the above argument, the following hypotheses were proposed:

H2a: The relationship between OCs and the decision on TC implementation is moderated by company strategy.

H2b: OCs are more likely to support the decision on TC implementation when companies employ the confrontation strategy rather than the non-confrontation strategy.

Industry Type

In the literature on target costing (TC) (e.g. Chenhall & Langfield-Smith, 1998; Joshi, 2001), TC implementation is shown to be biased towards larger companies as these companies have adequate financial and personal resources. Considering the company size in this study, the decision made to implement TC could be affected by this factor. In addition, since the unit of analysis in this study was the company itself but not the respondents, the measurement of industry type to determine company size was employed as a control variable. Company size is commonly defined in the literature as number of employees and annual turnover (e.g. Ferreira et al., 2010; Guilding et al., 2005; Huang & Chen, 2012; Huh et al., 2008). In the current study, company size was measured by the type of products produced. However, there were two types of

Malaysian automotive company, car makers and part and component makers. Hence, industry type was defined as car makers, while part and component makers was used as a control variable. This was an attempt to control the effect of these factors on the OCs supporting the decision to implement TC. Based on the above argument, the following hypothesis was proposed to test whether the expected effect of OCs measured by BSC perspectives was different across the two types of industry:

H3: The effect of OCs is different across the two types of industry

Implementation Decision on Target Costing and Organisational Performance

As raised by many previous studies (e.g. Ax et al., 2008; Duh et al., 2009; Huang & Chen, 2012; Huh et al., 2008; Ibusuki & Kaminski, 2007; Iulia, 2011; Juhmani, 2010), the companies' interest behind TC implementation was basically to improve organisational performance. They concluded that the higher achievement of TC was usually associated with higher organisational performance. Since previous studies (e.g. Ax et al., 2008; Duh et al., 2009; Huh et al., 2008; Juhmani, 2010) used only financial measures of organisational performance, this study adopted BSC perspectives, including financial and non-financial, to measure organisational performance. Thus, the need to examine the extended effect of the decision on TC implementation on both dimensions of organisational performance was to support the multi-dimensional function of TC. The following hypothesis was proposed:

H4: The decision on TC implementation supported by OCs ultimately increases organisational performance.

METHODOLOGY

Hypothesised Model and Variables Measurement

The research model employed in this study was developed based on the organisational capabilities theory following Kato and Yoshida (1999) and underlying that the successful implementation of TC could be affected by such capabilities. The model essentially describes the relationship between OC factors and decision on TC implementation in association with company strategy and industry type effectiveness. The model is further extended to describe the relationship between decision on TC implementation when supported by OCs and ultimate organisational performance. The research model developed in this study is illustrated in Figure 1.

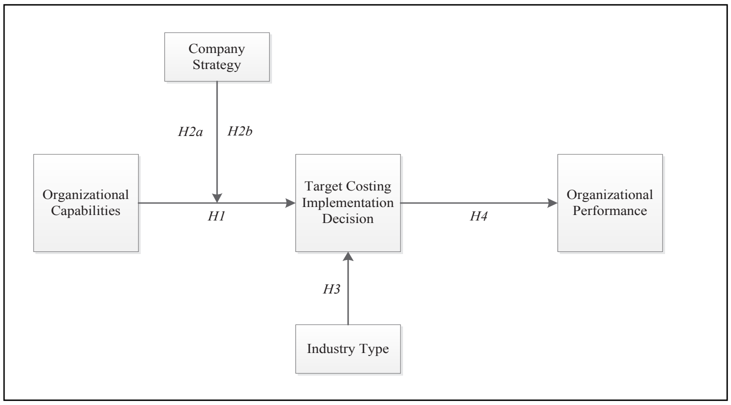

Figure 1. Research model and empirical schema

In the model, the OCs were regarded as an exogenous variable in the decision on TC implementation, which was in turn an exogenous variable in the ultimate organisational performance. The three constructs, OCs, TC implementation decision and organisational performance, were measured using the balanced scorecard (BSC) model. However, the dependent variables were the objectives of the decision on TC implementation, including cost reduction, quality, functionality and lead time. The first three variables were the crucial elements of TC presented in Cooper's (1995) Survival Triplet framework, whereas the fourth variable was the element extended by Souissi and Ito (2004) to Cooper's Survival Triplet framework. However, cost reduction was measured consistently with the financial perspective of the BSC model, while quality, functionality and lead time were measured consistently and, respectively, with the three perspectives of the BSC model i.e. customer, internal process and learning and growth.

The independent variables included nine OCs adapted from the Twelve Organisational Capabilities of Human Resource Alignment Scorecard (HRAS) of Becker et al. (2001). These included customer inputs, market analysis, accountability, collaboration, technological innovation, speed operation, productivity, knowledge and learning and top management support. These factors were further re-classified into three levels, local capabilities, architectural capabilities and process capabilities, following the OC model of Huh et al. (2008) and based on their operational definitions. In order to achieve the multi-dimensional measurement, the identified factors were measured using the four perspectives of the BSC model, given that each variable has four measures. However, the influence of OC factors on the decision made on TC implementation is likely supposed to be moderated by company strategy and controlled by industry type. Three types of strategy were adopted following Hibbets et al. (2003): cost leadership, differentiation and confrontation. In addition, two types of industry were defined, which included car makers and part and component makers.

Finally, the decision on TC implementation supported by OCs measures, including financial and non-financial, were supposed to affect both dimensions of organisational performance including financial and non-financial. In other words, the organisational performance was also measured using the four perspectives of the BSC model, given that the financial performance was measured consistently with the BSC financial perspective, while the non-financial performance was measured consistently with the last three perspectives of the BSC model, customer, internal process and learning and growth.

Research Sample and Data Collection

The Malaysian automotive industry was selected for the current study. The automotive industry was more suitable for the TC practice, especially in the case where this practice has not been widely studied in Malaysia, and was initially developed by the Japanese automotive industry. A questionnaire survey was conducted to collect empirical data using hand distribution through several visits and meetings with focus groups of relevant managers and executives. Along with the mailed questionnaire, the key informants were informed that the CEO/GM/COO/MD, senior managers and relevant executives were the targetted respondents. Accordingly, 48 Malaysian automotive companies out of the 380 companies selected based on the Malaysian Automotive Institute (MAI) completed the questionnaires distributed. Out of 515 questionnaires distributed, 201 questionnaires were collected. Of these, 11 were from motorcycle makers, 72 from car manufacturing companies and the remaining 118 from parts and components companies. Since motorcycle companies had not been considered in this study, the 11 questionnaires were cancelled. In addition, due to unusable answers for some questions and fully/partially un-completed sections, another 14 questionnaires were eliminated. As a result, the number of useable responses was only 176, giving a final response rate of 34%. Among the responding companies including car makers (4.2%) and part and component makers (95.8%), 42% were non-listed companies, while 30.1% and 27.8% were SMEs and listed companies, respectively. The majority of these companies produced more than five models for both the local and international market (Table 1).

Table 1
Companies profile

Profile	Frequency	Percentage
Company industry		
Car manufacturing	2	4.2
Part and component manufacturing	46	95.8
Total	48	100
Company Category		
Listed	49	27.8
Non-listed	74	42.0
SMEs	53	30.1
Total	176	100
Number of Models Produced		
2-5 models	56	31.8
More than 5 models	120	68.2
Total	176	100
Products Market		
Local/Domestic only	43	24.4
Both	133	75.6
Total	176	100

Data Analysis

The analysis method of the collected data combined the use of the Rasch Measurement Model (RMM) and Structural Equation Modelling (SEM). As one of the study contributions from the methodological perspective, the analysis started with the RMM to test the reliability and validity of items. This was followed by the SEM analysis using AMOS graphics. Specifically, all items under each composite variable were measured using the RMM Fit Statistics and Principle Component Analysis. After this, all the fitting items were directly interpolated by person measure and standard error to the SEM. This was based on Salzberger's (2011) suggestion that the Rasch measure can be treated as a single indicator for a latent variable when attempting to run the SEM to find the relationship between latent variables. In addition, the SEM was specified using path analysis, in which each construct was modelled as a composite variable derived from computing its items by mean (Byrne, 2010).

Reliability and Validity – The RMM Analysis

The Structural Equation Modelling (SEM) was built to correspond with the statistical reliability and validity generated through the RMM analysis. The reliability value (Cronbach's alpha = 0.84) exceeded the minimum value of 0.70, indicating an acceptable reliability value (Fisher, 2007). Higher reliability values provide evidence that the items under each variable are measured as a single construct (Fisher, 2007). In addition, the RMM analysis of Fit Statistics and Principle Component Analysis indicated that all items were working well in the same direction to measure and define each construct. The variance explained by measures for each construct closely matched the expected variance, while the unexpected variance explained in the first contrast of each construct was less than the expected (Table 2). Accordingly, the structural model was tested using directly observed variables as suggested by Awang (2012).

Table 2
Standardised residual variance (in eigenvalue units)

	Raw variance explained by measures		Unexplained variance in 1st contrast	
	Empirical	Modelled	Empirical	Modelled
OCs factors	30.4%	30.8%	7.6%	10.9%
Decision on TC implementation	33.1%	33.3%	8.7%	13.1%
Organisational performance	46.3%	46.9%	11.0%	20.5%

Structural Equation Modelling (SEM)

The structural model was tested based on the research model (Figure 1), in which the relationship between OC factors, decision on TC implementation and organisational performance was assigned. To examine the Goodness-of-Fit (GOF) for the structural model, three important GOF indices were selected. These included Comparative Fit Index (CFI), Root Mean Squared Residual (RMR) and Root Mean Squared Approximation of Error (RMSEA). For the GOF of the model, these indices should be CFI>0.90, RMR<0.09 and RMSEA<0.09 for an overall sample size of more than 150 respondents (Awang, 2012; Byrne, 2010; Hair, 2010). However, the initial outputs of SEM showed that the structural model did not meet these requirements, where the CFI of 0.833 was less than 0.90 and RMSEA of 0.098 was more than 0.09. For all factor loadings, it was found to be more than 0.50, thus meeting the criteria suggested by Hair (2010) and Byrne (2010) that each factor loading should be at least 0.50 and above for an overall sample size of more than 150 respondents. Using this guideline, there was no need to delete any of the factors, and this supported the study assumption that the RMM supported SEM in defining the fitting items.

To generate a good fit model, an alternative model was tested based on the changes suggested by the modification indices of the AMOS outputs. This resulted in the modified structural model illustrated in Figure 2, which shows a good fit model when the correlation between product quality and functionality of decision on TC implementation was made. The CFI of 0.904 (> 0.90), RMR of 0.027 (< 0.09) and RMSEA of 0.076 (< 0.09) indicated a good fit model. These values provided supportive evidence of a perfect model fit, indicating how the modified model assumed relationship between variables when these values were close to one. Thus, there was less discrepancy between estimated and observed constructs; thus the modified model clearly represented the data observed and was not different from those expected in the proposed model.

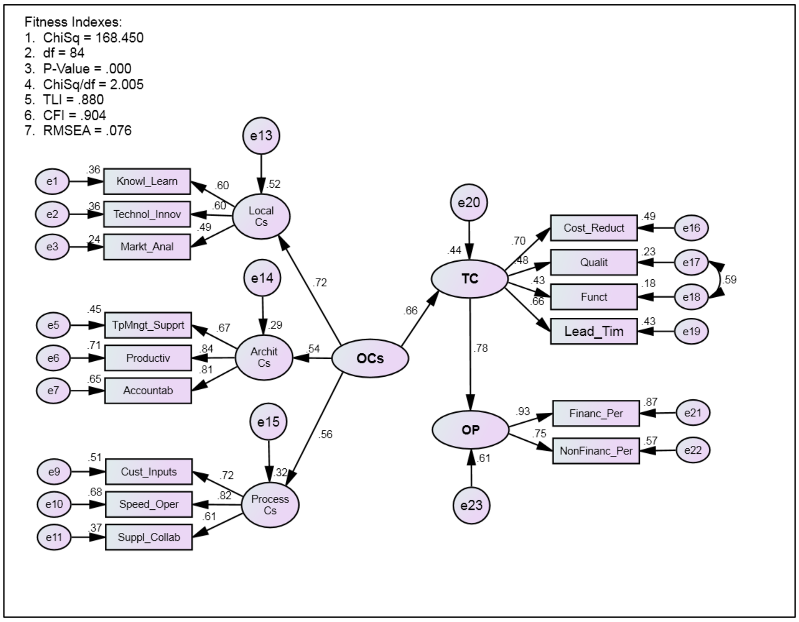

Figure 2. Modified structural model

Descriptive Statistics of Observed Variables

Since Structural Equation Modelling (SEM) using AMOS graphic was used to test the hypotheses developed, it was interesting first to describe the observed variables of the modified structural model. Table 3 below reports the descriptive statistics results including mean scores and SD of each variable. All variables had almost higher mean values (ranging from 3.95 to 4.65) and lower SD (ranging from 0.546 to 0.762), indicating that the data were close to the mean.

Table 3
Descriptive statistics of observed variables

Variables	N	Mean Score*	S.D.
Knowl_Learn	176	4.477	0.623
Technol_Innov	176	4.409	0.735
Markt_Anal	176	4.557	0.621
TpMngt_Supprt	176	4.460	0.603
Productiv	176	4.648	0.546
Accountab	176	4.506	0.614
Cust_Inputs	176	3.954	0.762
Speed_Oper	176	3.977	0.717
Suppl_Collab	176	4.290	0.702
Cost_Reduct	176	4.396	0.633
Qualit	176	4.439	0.570
Funct	176	4.242	0.614
Lead_Tim	176	4.049	0.660
Financ_Per	176	4.448	0.656
NonFinanc_Per	176	4.381	0.670
Total	176		

**Score:* the five points score: 4=extremely important; 3=generally important; 2=slightly important; 1=not at all important; 0=not sure

RESULTS

OCs and Decision on TC Implementation

The statistically significant regression weights for all factor loadings and structural constructs of OCs and TC are presented in Table 4. All the proposed path coefficients were significant. The main prediction of OC effect on decision on TC implementation was supported (Beta=0.665, p<0.001), indicating that the path coefficient was positive and significant. The three levels of local, architectural and process capabilities significantly reflected the OCs (Beta=0.719, 0.537, 0.565, respectively and p<0.001). Interestingly, the OCs were highly explained by local capabilities compared with the other capabilities. Nevertheless, all the three OC levels together affected the decision on TC implementation (Hypothesis 1 was supported).

Table 4
Standardised regression weights: OCs and decision on TC implementation

			Estimate	SE	CR	P	Label
TC	<---	OCs	0.665	0.316	3.472	***	OCs to TC
Local_Cs	<---	OCs	0.718	0.237	3.382	***	OCs to local capabilities
Archit_Cs	<---	OCs	0.537	0.244	3.336	***	OCs to architectural capabilities
Process_Cs	<---	OCs	0.565	0.343	3.359	***	OCs to process capabilities
Markt_Anal	<---	Local_Cs	0.493	0.197	4.182	***	Local Cs to market analysis
Technol_Innov	<---	Local_Cs	0.599	0.264	4.491	***	Local Cs to technological innovation
Knowl_Learn	<---	Local_Cs	0.597	0.242	4.591	***	Local Cs to knowledge and learning
Accountab	<---	Archit_Cs	0.805	0.143	8.543	***	Architectural Cs to accountability
Productiv	<---	Archit_Cs	0.843	0.132	8.578	***	Architectural Cs to productivity
TpMngt_Supprt	<---	Archit_Cs	0.673	0.356	5.271	***	Architectural Cs to top management
Suppl_Collab	<---	Process_Cs	0.611	0.115	6.837	***	Process Cs to suppliers collaboration
Speed_Oper	<---	Process_Cs	0.823	0.145	7.466	***	Process Cs to speed operation
Cust_Inputs	<---	Process_Cs	0.717	0.248	4.682	***	Process Cs to customer inputs
Cost_Reduct	<---	TC	0.486	0.117	5.340	***	TC to cost reduction
Qualit	<---	TC	0.482	0.117	5.340	***	TC to product quality
Funct	<---	TC	0.429	0.125	4.786	***	TC to product functionality
Lead_Tim	<---	TC	0.658	0.143	6.904	***	TC to lead time

Notes: Significant level at *** p<0.001 (two-tailed test)

Company Strategy Moderation

In the proposed model, the company strategy was employed to moderate the influence of OCs on the decision on TC implementation (Hypothesis 2a). The structural invariance of the modified model was likely tested across the moderator of company strategy group. A simultaneous analysis on the three types of strategy, cost leadership (N1=15), differentiation (N2=41) and confrontation (N3=120) was also conducted to test strategy moderation. Due to the technical problem that the AMOS Graphic could not run when the sample size was very small (Awang, 2012; Byrne, 2010) and in view of the argument that the confrontation strategy was suitable for TC implementation (Cooper, 1995), the first two strategies were combined. Hence, the results re-measured the moderating variable of the confrontation strategy (N=120) and non-confrontation strategy (N=56).

The multi-group analysis was conducted to assess the effect of the company strategy as a moderator variable. The only difference was constraining the path of interest (OCs → TC), where the moderator variable was to be assessed. Accordingly, the two models were estimated separately i.e. the constrained model, where parameter of the path of interest (OCs → TC) was constrained to 1 and an unconstrained model, where no parameter was constrained for the same path of interest. The difference in chi-square ($\Delta\chi 2$ (2) =6.537, p-value <0.05) between the constrained and unconstrained models was significant (Awang, 2012; Byrne, 2010) (Table 5). This indicated a significant moderation of company strategy on the causal effect of OCs on the decision on TC implementation (Hypothesis 2a was supported).

Table 5
Moderation test of company strategy

	Constrained Model	Unconstrained Model	Differences	Results
Chi-Square	299.736	288.199	6.537	Significant at 0.05
DF	172	170	2	
GFI	0.835	0.837		
AGFI	0.770	0.770		
CFI	0.871	0.876		
RMSEA	0.064	0.063		
CMIN/DF	1.714	1.695		

However, once the moderation was established, it was interesting to determine in which group (confrontation strategy and non-confrontation strategy groups) the effect of OCs on TC implementation was more pronounced (Hypothesis 2b). For doing so, the data were split based on the respondents of these two groups into two data files and the analysis using each data file was carried out. To begin with, the analysis used the confrontation strategy group followed by the non-confrontation strategy group. The test of moderation effect of the confrontation strategy was not significant, where the chi-square difference between the constrained and unconstrained model was less than 3.84, which is the value of the chi-square with 1 degree of freedom ($\Delta\chi^2$ (1) =0.436, p-value >0.05) (Awang, 2012; Byrne, 2010) (Table 6). This indicated that the confrontation strategy did not moderate the causal effect of OCs on the decision on TC implementation.

Table 6
Moderation test of confrontation strategy group

	Constrained Model	Unconstrained Model	Differences	Results
Chi-Square	152.349	151.913	0.436	Not significant at 0.05
DF	86	85	1	
GFI	0.856	0.856		
AGFI	0.799	0.799		
CFI	0.894	0.893		
RMSEA	0.082	0.083		
CMIN/DF	1.772	1.787		

However, the results shown in Table 7 revealed a significant moderation effect of the non-confrontation strategy, where the difference in chi-square value between the constrained and unconstrained model was more than 3.84 ($\Delta\chi^2$ (1)=0 6.1, p-value <0.05). This indicated that the non-confrontation strategies, including cost leadership and differentiation strategies, did moderate the causal effect of OCs on the decision on TC implementation (Hypothesis 2b was supported).

Table 7
Moderation test of non-confrontation strategy group

	Constrained Model	Unconstrained Model	Differences	Results
Chi-Square	142.387	136.287	6.1	Significant at 0.05
DF	86	85	1	
GFI	0.798	0.803		
AGFI	0.718	0.721		
CFI	0.826	0.842		
RMSEA	0.105	0.100		
CMIN/DF	1.656	1.603		

Referring to the results in terms of fitness indices, it can be seen that both constrained and unconstrained models for the confrontation strategy group had a better fit than those for the non-confrontation strategy group (refer to Tables 4 & 5). This supported the study assumption and was consistent with the relevant literature (e.g. Cooper & Slagmulder, 1997; Cooper, 1995; Huh et al., 2008) that the confrontation strategy was more suitable and supportive for OCs for successful implementation of TC than the other two strategies. This was supported with estimated beta coefficient measuring the causal effect of OCs on TC. The confrontation strategy (slope 0.70) was more pronounced compared with the non-confrontation strategy (slope 0.29). Since both slopes were significant, the type of moderation was partial moderation (Awang, 2012).

Industry Type Invariance

Further tests were conducted to examine the structural invariance of OC effect on decision on TC implementation across the industry type groups (Hypothesis 3). A simultaneous analysis of car makers (N1=67) and part and component makers (N2=109) was conducted. Following Byrne's (2010) suggestion, a test of invariant factor loadings was conducted together with the test of latent mean differences. The industry-type invariant was firstly conducted without constraining the invariance of OC factor loadings and structural paths, where the results showed a baseline chi-square value. Hence, the invariance of OC factor loadings was constrained to be equal for the car and part and component groups. Simultaneously, the mean of the latent construct of OCs in the structural paths (OCs → TC) for the car group was constrained to zero as a reference for the differences. Table 8 presents the invariance test across both groups at the model level.

Table 8
Results of industry-type invariance

Model Description	χ^2	df	Critical Value	$\Delta\chi^2$	Δdf	*p*-value	CFI	ΔCFI
Unconstrained model, no equality constraints	360.755	172	___	___	___	___	0.828	___
Constrained model, with equality constraints	386.685	180	21.96	25.93	8	***	0.811	0.017

Notes: Significant level at ***p<0.005 (Two-tailed)

The results revealed a significant change in the chi-square value at 0.005 level ($\Delta\chi^2$ (8) =21.96, p-value <0.005), where the difference was more than 21.96 with 8 degrees of freedom, which is the critical value of χ^2 changes based on Byrne's (2010) findings. Although the change in CFI (ΔCFI =0.017, p-value >0.05) was not significant, the more stringent χ^2 difference test was trusted (Byrne, 2010). Therefore, the significant change in χ^2 was enough to indicate that the two groups were different at the model level (Hypothesis 3 was supported). However, for a path-to-path level, no invariants existed, and the results revealed evidence of no significant differences between the two groups.

In reviewing the results of individual beta coefficients, further analysis of each OC factor was conducted to determine which factor loading parameters were not operating the same way across both groups. First, the analysis started with each OC level followed by all factors. The results in Table 9 showed that the two groups were invariant for local capabilities factor parameters (knowledge and learning, technological innovation and market analysis), where the difference in chi-square value between constrained and unconstrained models was not significant, and was less than the critical value of 5.99 with 2 degrees of freedom ($\Delta\chi^2$ (2) =0.816, p-value >0.05).

Table 9
Invariant test using local capabilities

	Constrained Model	Unconstrained Model	Differences	Results
Chi-Square	361.571	360.755	0.816	NS at 0.005
DF	174	172	2	
CFI	0.829	0.828	0.001	

Retaining the model and testing the invariance of the second OC level of architectural capabilities (top management support, productivity and accountability), the results revealed non-significant changes in the chi-square value between the two groups ($\Delta\chi^2$ (5) =9.379, p-value >0.05) (Table 10).

Table 10
Invariant test using architectural capabilities

	Constrained Model	Unconstrained Model	Differences	Results
Chi-Square	370.134	360.755	9.379	NS at 0.05
DF	177	172	5	
CFI	0.824	0.828	0.004	

Since the results showed that the car and part and component groups were invariant for both OC levels of local and architectural capabilities, it can be said that the issue of non-invariance seems to have been with all or some of the factor parameters in the third OC level (process capabilities). Accordingly, while maintaining the most recent model (local and architectural capability factors invariant), the test for the invariance of each factor parameters within the process capabilities was conducted separately. First, the test of the invariance was run with customer input factors, where the results revealed a significant change in chi-square value between the two groups ($\Delta\chi^2$ (6) =23.356, p-value <0.005) (Table 11). The results of speed operation factor also showed a significant change in the chi-square value between the two groups ($\Delta\chi^2$ (7) =24.954, p-value <0.005) (Table 12). Finally, the test of the invariance of suppliers collaboration showed a significant change in the chi-square value between the two groups ($\Delta\chi^2$ (8) =25.93, p-value <0.005) (Table 13).

Table 11
Invariant test using customer inputs as a factor: Process capabilities

	Constrained Model	Unconstrained Model	Differences	Results
Chi-Square	384.111	360.755	23.356	S at 0.005
DF	178	172	6	
CFI	0.823	0.828	0.001	

Table 12
Invariant test using speed operation as a factor: Process capabilities

	Constrained Model	Unconstrained Model	Differences	Results
Chi-Square	385.709	360.755	24.954	S at 0 .005
DF	179	172	7	
CFI	0.811	0.828	0.017	

Table 13
Invariant test using supplier collaboration as a factor: Process capabilities

	Constrained Model	Unconstrained Model	Differences	Results
Chi-Square	386.685	360.755	25.93	S at 0.005
DF	180	172	8	
CFI	0.811	0.828	0.017	

After testing all factor parameters and fixing the items that did not result in significant changes in the chi-square value, the final analysis indicated that all the factors of customer inputs, speed operation and supplier collaboration within the process capabilities level of OCs contributed to the non-invariance across both groups of car makers and part and component makers.

Decision on TC Implementation and Organisational Performance

Analysing the extended effect of decision on TC implementation involved assessing the role of TC implementation in linking the OCs supporting the decision on TC implementation to organisational performance (Hypothesis 4). The results in Table 14 show that the direct effect of decision on TC implementation on organisational performance was significant (Hypothesis 4 was supported), indicating that successful implementation of TC increased organisational performance. The regression weight of 0.779 for TC in the prediction of organisational performance was significantly different from zero at 0.001 level of probability (two-tailed test).

Table 14
Standardised regression weights: TC implementation and OP

			Estimate	S.E.	C.R.	P	Label
OP	<---	TC	0.779	0.147	6.047	***	TC to OP
Financ_Per	<---	OP	0.934	0.135	9.026	***	OP to financial performance
NonFinanc_Per	<---	OP	0.754	0.145	7.466	***	OP to non-financial performance

Notes: Significant level at *** p<0.001 (Two-tailed test)

Since OCs were measured using a balanced scorecard (BSC), organisational performance was also measured using these perspectives and grouped into financial and non-financial performance. The results showed that the organisational performance was more highly explained by financial indicators (Beta=0.934) than non-financial indicators (Beta=0.754) (see also Table 14). Nevertheless, it could be concluded that TC implementation, when supported by OC financial and non-financial measures, affected both dimensions of the organisational performance in terms of financial and non-financial performance.

DISCUSSION

The findings overall confirm the literature that the OC factors are recognised as success factors for TC implementation. In addition, the findings contribute to the organisational capabilities theory in supporting the argument that the OCs are the core success factors for TC implementation. Interestingly, the alignment measurement from financial and non-financial measures of

OC factors, decision on TC implementation and organisational performance in association with company strategy stressed the significance of this study. The study had extended prior research by looking at the OCs and TC from multiple dimensions, financial and non-financial dimensions. However, the three levels of OCs including local capabilities, architectural capabilities and process capabilities were classified based on the organisational capabilities model proposed by Kusunoki et al. (1995) and adapted by Huh et al. (2008). The results showed a significant impact of these capabilities on the decision on TC implementation. In particular, local capabilities strongly reflected the OC factors than other capabilities. This, however, contrasted with a study by Huh et al. (2008) that examined the relationship between these three capabilities and TC performance among Japanese companies. They found that the impact of local capabilities was relatively weak on TC performance, whereas architectural and process capabilities had a positive impact on TC performance.

Within the local capabilities as the main distinguishing factor of Malaysian automotive companies compared with Japanese automotive companies (e.g. a study conducted by Huh et al., 2008), as revealed in the findings, knowledge and learning, together with technological innovation factors were highly and significantly loaded. The findings confirmed the role of these factors as a basis for organisational changes required for TC implementation. In contrast, Smith et al. (2008) found that the technological innovation factor was not significantly correlated with MAPs in the Malaysian context. On the other hand, market analysis factor obtained the lowest loading on local capabilities. This gave evidence of less consideration by Malaysian automotive companies for this factor as one of the resources for TC implementation.

Among architectural capabilities, it was particularly interesting to note that accountability and productivity factors had the greatest loading compared to the top management support factor. Although the first two factors are considerably more important for TC implementation, top management support was highly recommended in many of the automotive studies reviewed (e.g. Everaert et al., 2006; Huh et al., 2008; Kato, 1993).

Since process capabilities are the process of knowledge interactions within the organisation (Huh et al., 2008), they are measured by customer inputs, speed of operations and suppliers' participation. All three factors were shown with significant loadings to OCs affecting decision on TC implementation. This provides considerable support for the findings of Huh et al. (2008), who reported that process capabilities were the most important factor for increasing TC performance. However, it can be concluded that the three levels of OC factors adapted from the Huh et al. (2008) study, even with different measures used in this study based on their operational definitions, were found to be significantly reflecting the OCs when deciding to implement TC.

The decision to implement TC was clearly reviewed in the literature and regressed on the development from cost reduction towards product value creation in terms of quality, functionality and lead time (Sharaf-Addin et al., 2014). One of the main contributions of this study was how to achieve the right balance among these elements. The best coefficient of the loadings of these factors was noted to be significant. It was interesting to see that product quality and functionality were found to be significantly correlated for achieving the best model fit. This provides a clear indication that both product quality and functionality are seen to be the product values that customers are looking for. Moreover, both cost reduction and lead time were found to be highly significant predictors for decision on TC implementation. These results were consistent with the extensive discussion of the TC literature.

In addition, the argument in the literature that the success of TC implementation depends on the company strategy employed for determining organisational structure (Cooper & Slagmulder, 1997; Kato, 1993; Tani, 1994, 1995) was found to support the study findings. The findings revealed that company strategy significantly moderated the causal effect of OCs on decision on TC implementation. Interestingly, among the three types of strategies, cost leadership, differentiation and confrontation, the effect of the confrontation strategy was not significant. In contrast, the effect of the other two strategies (combined as non-confrontation strategy for technical analysis purpose) was significant. Therefore, it can be suggested that the moderator group strategy of non-confrontation does moderate the causal effect of OCs on the decision on TC implementation, whereas the confrontation strategy does not moderate such causal effects. This can be interpreted as that the employment of confrontation strategy supports the work of OCs in terms of financial and non-financial measures when deciding to implement TC. Based on this result, the literature argument that the confrontation strategy is suitable for TC implementation (e.g. Cooper & Slagmulder, 1997; Cooper, 1995; Huh et al., 2008) was totally supported. However, the findings contrasted with the findings of Hibbets et al. (2003) in US and German-based TC adopting companies. They found that the companies pursuing differentiation strategy are more likely to implement TC than those pursuing other competitive strategies (e.g. cost leadership or confrontation strategies). Moreover, these findings are different somehow from studies conducted on the Malaysian automotive industry. For example, the findings of the study conducted by Abdullah (2006) showed that within the Malaysian car-maker Proton's generic strategies, cost leadership and differentiation strategies were the choice for business strategies. He concluded that these two strategies were employed through enhancing research and development, outsourcing practices to access cheaper inputs and developing products practised by Malaysian automakers and suppliers. However, these two strategies can be more workable if Proton built up customer confidence regarding product quality and functionality. Making a trade-off between low cost (cost leadership) through financial OC measures and high quality (differentiation) through non-financial OC measures as the main focus of TC in this study was supported by the confrontation strategy. Therefore, in order for Malaysian automotive companies to maintain their competitive advantage, they should fit their business strategy to the competitive market requirements, which are the main focus of the confrontation strategy.

In terms of industry type invariance, there was a significant difference between the car and part and component groups at the model level. They were invariant for both OC types and local and architectural capabilities, but not for process capabilities. Since the process capabilities factors led to substantive meanings of non-invariance across the two groups, it was interesting to find the extent to which these factor parameter capabilities differed. The final results of the subsequent analysis revealed that the process capabilities including customer inputs, speed operation and supplier collaboration factors were the main factors contributing to the non-invariance across both groups.

Finally, the effect of decision on TC implementation on organisational performance was found to be significant. This provided evidence that the successful implementation of TC overall increases organisational performance. This is completely supported by an extensive review of relevant studies (e.g. Ax et al., 2008; Duh et al., 2009; Hamood et al., 2011; Huang & Chen, 2012; Huh et al., 2008; Ibusuki & Kaminski, 2007; Iulia, 2011; Juhmani, 2010; Okpala, 2016). It was interesting to note that financial performance loading reflected organisational performance more highly than non-financial performance. This supported the initial concept of TC as understood by some practitioners as TC is only about cost reduction. Recently, TC has been widely accepted as a tool for improving product quality and making a trade-off between cost, quality and functionality rather than only for cost reduction. Based on the findings, this is especially true when an organisation employs the confrontation strategy for consistency between OC financial and non-financial measures in TC implementation. However, interpreting the results discussed above can be compared with previous studies that have used the same measures for financial performance such as profitability growth, operating income, return on assets and return of investment. All previous studies were in agreement with the results emerging from this study, and confirm that TC implementation increases financial performance. For non-financial performance, the unique contribution of this study was the adoption of BSC non-financial perspectives to measure non-financial performance when implementing TC. As such, the comparison with previous empirical studies (e.g. Al-Awawdeh & Al-Sharairi, 2012; Duh et al., 2009; Huh et al., 2008; Juhmani, 2010; Rattray et al., 2007) was difficult due to the lack of consistency in measuring non-financial performance.

CONCLUSION

This study examined the relationship between OCs, decision on TC implementation and ultimate organisational performance in association with company strategy and industry type effectiveness. The overall picture emerging from this study came from the study conducted by Huh et al. (2008) on Japanese companies. As a main contribution of this study, the three main constructs including OCs, decision on TC implementation and organisational performance were measured using the four perspectives of BSC. This was an attempt to fill the gap in the literature to provide a comprehensive list of measures including financial and non-financial when examining the effect of OCs on decision on TC implementation and ultimate organisational performance.

The results provided evidence that the OC factors positively and significantly influenced the decision on TC implementation (Hypothesis 1 was supported). All the three levels of OCs, namely local capabilities, architectural capabilities and process capabilities, defined based on the Kusunoki et al. (1995) model and modified by Huh et al. (2008), significantly reflected the OCs, and all the factor loadings for each group were positive and significant. In addition, the effect of OCs on TC decision on implementation was relatively moderated by company strategy (Hypothesis 2a was supported), supporting Cooper and Slagmulder (1997), Cooper (1995), Dekker and Smidt (2003) and Kato (1993). Interestingly, non-confrontation strategies including cost leadership and differentiation had a significant moderating effect on the causal relationship of OCs on decision on TC implementation. In contrast, such effect was not found for the confrontation strategy (Hypothesis 2b was supported). This indicated that the confrontation strategy was suitable for OCs to be a supportive tool for TC implementation, consistent with Cooper's (1995) argument. On the other hand, there was a significant invariant between car makers and part and component makers in local capabilities and architectural capabilities levels, but not in the process capabilities level (Hypothesis 3 was supported). The extended effect of decision on TC implementation on organisational performance was further found to be positive and significant (Hypothesis 4 was supported). This confirmed the multi-dimensional effect of TC implementation on organisational performance as argued by Huh et al. (2008) and others. In summary, the results confirmed the successful effect of TC factors when measured from financial and non-financial dimensions on TC implementation decision and ultimate organisational performance. Thus, the study's assumption that the focus of TC technique was not only seen to be related to cost reduction was supported. Instead, quality and functionality features were seriously perceived when deciding to implement TC through integrating relative OCs financial and non-financial measures.

This study assessed the success of TC implementation based on the idea that the balance across TC objectives is crucial for its success and the measurement tool for OCs as success factors influencing TC implementation is simultaneously important. This was through the adoption of the BSC model in measuring OCs affecting TC implementation, with the aim of seeing how the BSC model can be a supportive tool for TC implementation. The findings of this study interestingly showed that the full consideration of both dimensions of OCs, including financial and non-financial, by applying the BSC model, was important for achieving the balance across the financial and non-financial objectives of TC implementation. Additionally, the study contributes to the empirical practices of TC within the Malaysian automotive industry in particular and the Malaysian manufacturing and service industries in general. From the methodological perspective, the research method used and data analysis, which combined RMM and SEM, provided an interesting idea that can be added to findings in management accounting research.

There are limitations that should be noted in this study. First, adopting organisational capabilities theories based on Kato and Yoshida (1998) would make it easier to address the study objective, but such theories are incomplete and sometimes conflicting when the nature of the factors are not identified. Other relative theories also can be adopted. According to Kato and Yoshida (1998), the theory of organisational knowledge creation is a source of continuous innovation that is perceived as one of the competitive advantages of Japanese companies. Second, the sample size limitation in the automotive industry was one of the constraints for data and results generalisation, especially for different industries. Third, like any other questionnaire survey, the limitation of data collection using such a method was also encountered. Many attempts were made to get reliable information, especially when the research sample was classified into two groups, car makers and part and component makers, as the number of car makers is larger than that of part and component makers. Although using the Malaysian automotive industry as a case study sample was a good way to discover the broad view of TC implementation issues, especially in relatively new literature, future research must build on the foundations using multiple-industrial case study methods that are more suitable for providing cross-sectional valid data and powerful statistical results.

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