

ROLE OF MANAGEMENT ACCOUNTING PRACTICES IN CREATING VALUES: A CASE STUDY OF ASIA HIGHWAY

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ABSTRACT

Management accounting plays crucial role in a company because management accounting information helps managers to make decision. One of the areas that need critical analysis to make decision is marketing area where customers' satisfaction is essential. In order to sustain customer satisfaction, various efforts need to be done by a company so that values to customer can be delivered. This study examined the role played by management accounting practices in the biggest highway concessionaires in the country in delivering values to customers. Furthermore, continuous improvement and innovation initiatives implemented by the company in delivering the customer values are carefully examined to see the how management accounting practices being applied in those initiatives. The impact of the efforts conducted, financially and non-financially were examined too.

INTRODUCTION

Management accounting deals with planning, analysing and implementing control and communicating strategies throughout the company (Hilton, 2009). One of the areas is marketing (Mohd Yatim, 1992). Marketing deals with identifying customers' need, developing products or services that suits their need and promoting them and importantly to ensure that ensure that customers are receiving values for money spent on products or services sold and provided to them (Woodruff, 1997; Spiteri & Dion, 2004).

In the late 1980's management accounting was once criticised as being losing its relevancy. It has been claimed that management accounting has been over shadowed by financial accounting data, being too aggregated and distorted and irrelevant to the managers (Johnson & Kaplan, 1987). However, these critiques had actually boosted the development of the management accounting itself where many new techniques and approaches were developed in order to eliminate waste and create value to the stakeholders during the stage 3 and stage 4 in the IFAC model. This is when accountants are no longer perceived as scorekeepers but as business partners (Roslender, 1996; Sulaiman et.al, 2008)

This study is conducted to illustrate how management accounting practices assist Asia Highway, in creating values for one of its crucial stakeholder, the customers through excellent services, continuous improvements and innovations.

Asia Highway is selected for this case study because of its remarkable achievements in National Award for Management Accounting (NAfMA) for the year 2010 and 2011. In 2010, Asia Highway bagged the Practice Solution Award and won the Best Practice Award in 2011. Since NAfMA was established to recognize organizations with best practice in management accounting that created values and leads to business excellence, it is believed that Asia Highway has been successfully implementing management accounting in its daily operation.

The main objective of this study is to explore the use of management accounting practices within an organisation especially in creating values through high quality services for customers. Hence, this main objective can be specified into these points:

1. To identify management accounting techniques and tools which are in place used to create values for customers in Asia Highway
2. To examine specific management accounting information (MAI) being utilized in delivering values for the user of the expressways
3. To examine the impact of efforts implemented in creating quality services value on Asia Highway financial and non-financial performances

LITERATURE REVIEW

Evolution of Management Accounting

Management accounting (MA) is a process of identifying, measuring, analysing, interpreting and communicating information in pursue of an organisation goals (IFAC, 1998). This process also involved a specialised information system that helps to provide financial and non-financial data that plays essential part in assisting a company decision system (Xu-Ying, 2006; Talha et.al, 2010).

Management accounting has been experiencing a relevance lost period during the 1980s. That was the period where management accounting was highly criticised for being too aggregated and distorted. Thus, MA failed to provide accurate and precise information for managers. It was also argued that management accounting was overshadowed by financial accounting. The development of management accounting during that period was considered as stagnant, stalled and not responsive to the rapid changes happening in the business world. Subsequently, these resulted in other problems such as inaccurate costing, misled profitability as well as timeliness of accounting information when the data used was based on the historical data (Johnson & Kaplan, 1987; Roslender, 1996; Ibrahim Kamal et.al, 2003; Halbouni, 2012).

Conversely, looking at the brighter side, the “relevance lost” initiated by Johnson and Kaplan (1987) actually led to various new management accounting practices such as balance scorecard and strategic management accounting. It has been claimed that relevance lost actually boosted the cost allocation techniques development such as Activity Based Costing (ABC) and Target Costing leading to the revival of interest in the management accounting study.

Furthermore, relevance lost actually acted as an eye-opener for managers to be more focus on profit maximization and cost reduction. Practitioners also began to structure best practices to be used in cost management area. Nonetheless, the positive developments can be considered as a milestone where management accounting was integrated with marketing theme as well as other method such as value adding process and target

costing philosophy. This is called as strategic management accounting (Roslender, 1996).

Furthermore, strategic management accounting has been elaborated in few stages. The first stage is where relevant techniques were invented such as *activity based-costing, backflush accounting, throughput-accounting, target costing and life-cycle costing*. During this period there was a growing attention given to the aspect of quality in production leading to the development of cost of quality. Later, second stage came into the picture when *activity-based costs management and activity based management* were developed. This stage also emphasised on value chain analysis, driver analysis and strategic positioning analysis in order to establish cost of quality. *Continuous performance improvement* was also introduced in this second stage where businesses were encouraged to integrate manufacturing, engineering and marketing excellence in their operation. This is claimed to be vital for them in keeping pace with the global competition, advance change in technology and shorter product life-cycles (Roslender, 1996; Hilton, 2009).

Finally, the third stage in the strategic management accounting development is related to critical success factors such as learning and growth as well as customer focus. These factors are crucial for long term success since businesses need to create values and sustain positive relationship with its stakeholders including the employees, suppliers and customers. These elements have been excellently demonstrated in Kaplan's balanced scorecard (Kaplan & Norton, 1996).

Next, it is suggested that organizations in new millennium need to integrate traditional and non-traditional management accounting methods in order to make better decisions. It is highlighted that the emergence of these new techniques acts as a sign of revitalization of management accounting yet companies need to choose the best technique to be employed between the new practices or the traditional method. (Sharma, 2000; Gralund, 2001).

The evolution of the management accounting techniques can be explained from two perspectives, Anglo-American perspective (IFAC Model) and Sino-Japanese perspective (AKIRA Model). Generally, Anglo-American perspective provide outcomes without specifying methodologies

whilst Sino-Japanese perspective have identified means of management accounting techniques on how such outcomes could be achieved. Although both of them are looking from different perspectives, these models give a brief and thorough picture of accounting practice development stages to be followed.

Rosmawati and Normah, (2004) found that attention of more developed countries have shifted to Stage 4 management accounting of Anglo-American perspective, creation of value through effective use of resources and technology. However, it was found that the development of management accounting in Asia is rather slow and still influenced by traditional society (Nishimura, 2005).

Besides, study conducted by Granlund, (2001) had demonstrated that there is more to the continuity in management accounting practices than mere resistance to the intended changes. Given these, it could be argued that, learning best practices from other organizations would possibly provide greater opportunities for Malaysian companies moving towards higher stage 4 of IFAC and AKIRA model.

MANAGEMENT ACCOUNTING PRACTICES IN MALAYSIA

Before discussing on the MAP in Malaysia, stages in the management accounting evolution will be discussed. Stage 1 (prior to 1950) focus on cost determination that relates on stock valuation and location of overheads. Cost estimation is used to control financial position. Some of the techniques developed during this stage were the ratio analysis, budgeting, financial statement analysis. Stage 2 (1965-1985) emphasizes on generating information that are useful for management planning and control. Some of the techniques developed were marginal costing, standard costing, CVP analysis and responsibility accounting. Stage 3(1985-1995) focused on waste reduction, process analysis and cost management techniques in order to eliminate non-value added activities. Techniques practice is Just-in-Time (JIT) and Activity-Based Costing (ABC). Stage 4 (1995–onwards) focuses on enhancing the creation of value, through the effective usage of resources and technologies. Techniques practice at this stage are Total Quality

Management (TQM), Activity-Based Management (ABM), Benchmarking and Reengineering. (IFAC, 1998)

A research conducted among local Malaysian firms reveals that application of management accounting techniques in Malaysia is still low with very few companies have create the post of management accountants and not strategically utilize their expertise (Ibrahim Kamal et.al, 2003).

Another exploratory study conducted also revealed that Malaysia is still at the first and second stage of the IFAC's framework of management accounting where standard costing are being used by majority of companies in Malaysia (local and Japanese firms). Despite all the feedbacks and opinions given on standard costing, Malaysian companies regard this technique as the most useful tool to control cost and measure performances (Sulaiman et.al, 2005).

Malaysian companies were also highly depended on traditional budgets where it is reported that senior management is the greatest influence that caused this trend. It is also reported that there was a perception existed that managers should be judged on their ability to meet budgets (Nishimura, 2005).

In contrast, findings from few studies reported that there are Malaysian firms are moving forward by implementing the new cost management system as well as strategic management accounting tools such as target costing, ABC and balanced scorecards (BSC) although the amount are still small (Sulaiman et.al 2004; Nishimura, 2005) Furthermore, a recent study conducted shows that there was an increase in MA usage among manufacturing companies in Malaysia yet, those companies are still using on both traditional and advanced MA techniques due to competitive environment(Tuan Mat et.al, 2010).

While the use of return on investment in Malaysia is quite low, Malaysian companies seemed to take customer satisfaction and quality as performance measures (Sulaiman et.al, 2004).

CUSTOMER VALUE, SERVICE QUALITY AND CUSTOMER SATISFACTION

Customer value can be defined as the difference between the values gained by the customer while using a product or service which is greater than the cost of acquiring them (Woodruff, 1997; Helgesen, 2007). Usually, businesses deal with the issue of managing and fulfilling customers' expectation towards a product or services provided. This is a point where customers and businesses established trust or bond between them (Butz & Goldstein, 1995; Holbrook, 1992). Therefore, it is undeniable that this concept is considered as an essential foundation for all marketing activities.

There are three emerging perspectives in managing customer value. Firstly, managing customer engagement, secondly managing customer networks and finally, managing customer experience. Customer engagement has been regarded as customer behaviours regardless to purchase but as a consequence of being engaged or focused on certain brand or firm. Those behaviours are word-of-mouth, blogging and customer ratings. Meanwhile, managing customer network deals with the quantifying of network effects on customers' decision making process and lastly, managing customer experience is about total experience gained by the customers including emotion, affection, cognitive, physical and social responses towards a product or services (Verhoef and Lemon, 2012).

It has been found that service quality has greatest effect on customer satisfaction. However, satisfaction has been found to be an influencing factor towards customer loyalty. Thus improving service quality, customer experience and customer value in order to achieve higher customer satisfaction would also help to increase customer loyalty (Deng et.al, 2010; Verhoef and Lemon, 2012). Indeed, that maintenance of customer loyalty and faithfulness facilitates customer focused structure and thus improve firm performance (Johnson et.al, 2012).

Subsequently, businesses are strongly advised to focus on their customers very well in order to sustain their performances and market shares. Therefore, customers need to be understood so that more value for customers can be delivered. It is agreed that in understanding customers, several aspects need to be considered such as the long-term worth of

customers in terms of profitability, customers' turnaround and their shares in the market (Woodruff, 1997; McManus, 2012).

MANAGEMENT ACCOUNTING INFORMATION AND MARKETING DISCIPLINE

In order to create values companies would require relevant information. One of the information needed is the marketing performance. Hence, marketers also need to have information on customer account as one of marketing basis. This information about customer is considered as a natural part of management accounting. Nevertheless, relevant and accurate information about customers and markets are the keys towards implementing market orientation in a company (Goebel et.al 1998; Helgesen, 2007).

Next, there was a need for market-oriented management accounting approach that can be practically used by the marketing managers. It is so argued that accounts should be made available for the marketers especially for those in the strategic department. This is crucial for them to get closer understanding on the financial performance and in the same time helps them to identify profit and non-profit measures of the company's performance (Helgesen, 2007; McManus, 2012).

Customer profitability analysis (CPA) is a technique that allows revenues and costs to be allocated based on segments or individuals (Van Raaij et.al, 2003; Ulgaga, 2003). This method would also show any profitable opportunities available in the market.

It has been said that this method is a specific application of activity-based costing (ABC) where the link between activities and resources consumed are demonstrated. Moreover, ABC method allows companies to identify their cost pools together with the cost drivers. Afterwards, costs are allocated according to cost objectives. Therefore, companies using CPA would be able know specific cost incurred and any result generated would be a good basis in the decision making process (Van Raaij et.al, 2003). CPA also has been regarded as a good practice of Customer Relationship Management (CRM) due to its ability to categorise customers based on their segments, potentials and profitability (Van Raaij et.al, 2003; Johnson et.al, 2012).

RESEARCH FRAMEWORK

Figure 1 illustrates the research framework that provides structure for this study. In the beginning, this study will be examining MA practices in Asia Highway specifically on MA tools and techniques as well as MA information utilized in delivering customer values. Finally, impacts on Asia Highway's financial performance and non-financial performance will be studied.

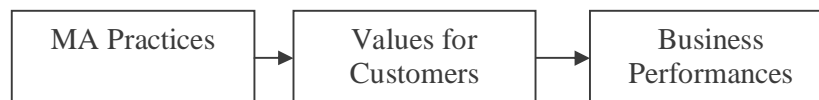


Figure 1: Research Framework for the Study

RESEARCH METHOD

Case study method has been chosen because this approach provides a distinct feature since the focus is on real case and resulted in comprehensive understanding of the organisation and issues being studied. Thus, case study is the most appropriate way to explain the presumed relationship between the management accounting, innovations and value creation in the Asia Highway. Case study method is technically defined by Yin (2003, p.13) as:

“An empirical inquiry that investigates a contemporary phenomenon within its real-life context especially when the boundaries between phenomenon and context are not clearly evident” ...

In the beginning, literatures on the current practices of management accounting, innovations and value creation topics were reviewed. This step is considered as essential since previous literatures gave insights and guidance in defining the case and units to be analysed.

After the case study was designed and a research framework was developed, data were collected as evidences. Afterwards, these data collected were analysed strategically to answer the research questions and meet the

research objectives. Finally, a case study report is prepared to provide clear understanding on the results and findings of the study.

In this study, data and information were gathered from two main sources, primary and secondary. Primary data were obtained from interviews, observations and e-mail communications. Meanwhile, secondary data sources include documents such as reports, newspaper clippings and books.

Three different sessions of face-to-face interviews were conducted in order to elicit information about Asia Highway. These interviews were conducted to get answers for the research questions developed. E-mails were sent as well as phone calls were made to key personnel in order to set the appointments.

The first face-to-face interview was held between the researcher and the Managing Director of Asia Highway on the 2nd of July 2012. Her first degree is a Bachelor of Science in Business Administration from the Central Michigan University, United States of America and obtained her MBA in the same university. She began her career with Asia Highway as a Senior Manager in the Treasury Department in 1994. Then she was appointed as the Managing Director of Asia Highway on the 1st April 2007. She was selected to be interviewed due to her top post in the company. Hence, a broad view of the company's strategic directions could be obtained.

Next, the second interview was conducted on 23rd of November 2012 with the Head of Strategic Marketing Department. He holds a Bachelor of Business Administration from Universiti Teknologi Mara (UiTM). He was selected to be interviewed due to his position leading the department responsible for Asia Highway strategic marketing program. Among the successful programs initiated by this department are Asia Highway loyalty program.

In addition, two separate presentations were held to explain the company backgrounds, financial performance, human resource practices and management accounting application throughout the company. Explanations were conducted in accordance with NAFMA criteria. The first session were conducted from 23rd of May 2012 to 24th of May 2012. Another session was conducted on 22nd November 2012 to briefly explain about the Time Travel Advisory (TTA).

Besides, observations were conducted in order to complete this study. First, an observation was done at Traffic Monitoring Centre (TMC) to see how Asia Highway monitors traffic. Then, another observation was made at Subang Toll Plaza to see how the traffic management systems work in Asia Highway. Finally, another observation was done on how does the business intelligent software used by Asia Highway operates daily and help Asia Highway to be successful. Observations were done from 22nd of November until 23rd of November 2012.

On the other hand, secondary data needed to complete this study were gathered from the NafMA 2011 and NafMA 2010 submission reports as well as NafMA Presentation by key people in Asia Highway. Information gathered are considered as essential due to the breadth knowledge provided on the management accounting practices, continuous improvement done and value creation of Asia Highway.

Then, all annual reports made available in the Bursa Malaysia's website were downloaded and used for further analysis. Other than those reports, a copy of CSR Reports 2009 and Sustainability Report 2011 were provided by Asia Highway for the purpose of this study.

FINDINGS AND ANALYSIS

This section addresses the overall MA Tools and Techniques application at Asia Highway. The subsections that follow will discuss the roles and contributions of these tools and techniques towards the success of management accounting-based initiatives in Asia Highway.

MA TOOLS AND TECHNIQUES APPLICATION IN ASIA HIGHWAY

Management Accounting Personnel in Asia Highway

MA personnel in Asia Highway are referred to the managerial level personnel or middle management team, as they are the users of various MA functions, processes and information across the organisation.

Balanced Scorecard

Asia Highway started to implement Balanced Scorecard (BSC) in 2009 and four perspectives were established; Financial, Customer, Internal Business Process and Organisational Learning and Growth. All Asia Highway's vision, missions and quality policy are embedded in the company's BSC introduced by Kaplan & Norton (1996).

Asia Highway adopted Balanced Scorecard ('BSC') approach as the company's performance measurement system. Therefore, the company strategic objectives are defined based on BSC's four perspectives which are "Financial", "Customer", Internal "Business Process" and 'Learning and Growth'.

Under the "Customer" perspectives, Asia Highway outlined three key objectives to achieve outstanding customer engagement. Those three key objectives are; to exceed customer expectations, to provide consistent positive experience and be committed in social responsibility. These key objectives are further translated in Asia Highway's customer focus perspective. This perspective is developed to identify the important areas for Asia Highway to create values.

Safety

The first aspect in the customer perspective is safety. This is because Asia Highway believed that unsafe roads lead to accidents that could cost lives. Therefore, Asia Highway spends approximately RM500 million annually on maintenance costs and up to RM89 million was spent in 2011 just for road safety investments. In addition, Asia Highway is also trying to educate the users of its expressways with good driving attitudes. This is executed through Asia Highway's safety awareness initiatives such as 'Malaysian Unite for Road Safety' (MUFORS) and "Gerakan Motosikal Pencetus Amalan Keselamatan" MUFORS' (GEMPAK MUFORS).

Service level

In order to provide excellent service along the roads, Asia Highway continuously assesses the service level and implements improvement initiatives necessarily. There are two main areas that always being monitored which are the mainline (highway) management and toll plaza management.

The mainline management focuses on the traffic pattern, service capacity and travel time reliability while toll plaza management deals with traffic and service levels at toll plazas such as queue lengths and toll lane capacity utilization.

Operational efficiency

Under this aspect, cost and resources optimisation were achievable due to preventative maintenance strategy rather than curative strategy. Asia Highway is implementing Enterprise Risk Management (ERM) approach to identify, analyse, prioritise and monitor the risks on the utilities and facilities provided along the highway.

Convenience

Next, another aspect in the customer focus perspective is convenience. This aspect concerns on the road users' convenience while travelling on Asia Highway's expressways. This is important since drivers need sufficient rest after continuous driving that may lead to fatigue and accidents. Continuous upgrading of Rest and Service Areas (RSA), Lay-bys and Overhead Bridge Restaurants (OBR) are among the initiatives taken to improve customer convenience while travelling.

Value for money

Although value for money is an aspect of the customer value perspective, it can be said that this aspect is the sum of other elements mentioned before. This is because other improvements made actually contributing for nicer and comfortable driving experience along the highway. Asia Highway has managed to provide a sufficient travelling time of 9 hours in total from South to north of the country under the allowable speed limit of 110km per hour compared to the federal roads with average of 60-70km per hour.

Strategy map

The first step in the BSC methodology is to develop the Strategy Map. The Strategy Map is the strategic part of BSC framework that illustrates Asia Highway strategy for value creation. The strategy map is formed through several brainstorming sessions with all the Head of Divisions (HODs).

Based on the proposed Strategy Map, Strategy Objectives is initiated by a management team lead by the Managing Director (MD) and comprises the Chief Financial Officer (CFO), Chief Operating Officer (COO) and Heads of Divisions. Strategic objectives proposed are based on the BSC perspectives and will be discussed with the middle management since they will be executing the action plans to achieve the strategic objectives. These strategic objectives are then deliberated to all employees through various channels like seminars, discussions and intranet website.

Key Performance Indicators

Subsequently, the company strategies were cascaded to all levels of management and staffs through Corporate Scorecard, MD's Scorecard, Departments and Divisions Scorecard and lastly, Individual Scorecard.

In the Individual Scorecard, Key Performance Indicators (KPIs) were set to benchmark individuals' performances based on the Strategic Objectives. Employees at every level and function are accountable to achieve prescribed performance target which are aligned with the Corporate Scorecard. This is important to ensure that everybody in the organisation is working towards the same goal.

Budgeting

Asia Highway also developed a plan called Annual Operating Plan (AOP). The AOP consist of annual business plan and detailed budget for all sections, regions, divisions and departments, which are the cost centres within the Company.

The process of constructing budgets begins with communicating with Cost Centre Heads (COCs) so that their budget preparation process will be smoothly guided. Afterwards, the COCs would be responsible to collect inputs from individual staff and ensure that the budget is accurately done.

Next, the Finance Division will be responsible to consolidate all budget submitted and produce the draft of detailed budget as a part of that year's AOP. The AOP is subjected to MD and BOD approval.

Six Sigma

The Six Sigma Program started in 2007 is one of the key improvements initiated in Asia Highway in order to achieve its strategic goals. Through this program, Asia Highway is able to reduce defects and enhance efficiency and effectiveness in its daily operations thus resulting in safer and convenient expressway.

This program actually involves top and middle management as the Project Champion and Team Leader. Focusing on the expressways' operations and maintenance, this program has been showing positive impact on costing thus, improving the financial position of the Company. Until 2011, there are two Green Belters and nine Black Belters certified with Six Sigma certification.

Value Engineering

Value engineering is the management technique applied in conducting RSAs, Lay-bys and OBRs upgrading projects. Value engineering is used because this approach helps Asia Highway to reduce cost. These could be clearly seen in the execution of all upgrading works stages.

At the planning stage, feedbacks and inputs from customers are gathered through 'Customer Care Online Management System' (CCOMS) and these inputs will be analysed. This would be the basis of any upgrading project to be executed. There will be discussions held between project and operation team to determine the facilities that need to be upgraded based on the analysis done. Financially, reference will be made to the 5- Year Strategic Plan as well as the Annual Budget approved by the Managing Director.

Next is the design stage where at this stage, consultant that fulfils all requirements will be appointed. The appointed consultant will do the design according to Asia Highway standard and design guidelines. In the detailed design, local environment and surrounding details are taken into consideration. Meetings will be held and the consultant may give their feedbacks on how to improve the functionality and the quality of the output.

Subsequently, at the tender and award stage, contractors were selected based on performance and experiences. Based on explanation given, there will be e-bidding being exercised to ensure fairness and cost optimisation.

Meanwhile, at the execution stage constructions are conducted by taking into consideration of feedback in the meetings and report. Users' convenience is taken care during the upgrading process by ensuring that existing facilities are still usable and the road leading to the petrol pump is accessible. There are also testing and commissioning as well as joint inspection conducted during this stage by Asia Highway, MHA and responsible authorities.

Finally, at the post construction stage, defects liability period will be established so that all defects can be fixed within specified timeline in order to meet certification and users' convenience. Feedbacks once again will be gathered from the project and operation teams for future improvement. In the end, final account is prepared and contractor's performance in executing this project will be rated too.

Analysis Techniques

Asia Highway consolidates and analyses feedbacks, inputs and information gathered from the Customer Database and Management Systems (CDMS), electronic transactions using various kind of analysis techniques. These analyses are conducted using business intelligence software called TARGIT.

There are decision tree analysis, which is used for decision and mitigation analysis. Results are usually used in certain campaign, promotion and reward program. This method also used to study traffic leakage, toll violations and low usage transactions.

Meanwhile, segmentation analysis is used to break customer data based on geographical area, demographic pattern and behaviour on toll usage. This technique enables Asia Highway to identify customer market segments and work on any marketing programs and improvement needed to solve traffic problems from there.

MA INFORMATION UTILISED IN ASIA HIGHWAY TO DELIVER VALUES

The next research objective is to examine how management accounting information (MAI) is used by Asia Highway in order to create values to customer. A huge amount of data and information are used in Asia Highway's operation. In Asia Highway, MAI comes from throughout the expressways' operations such as toll operations, toll revenue, non-toll revenue, customer relations, traffic safety, road maintenance, human resource and administration.

MAI is essential for Asia Highway because these data and information help to ensure that strategic objectives are met, customers' expectation and requirements are fulfilled, to gauge internal process efficiency and to identify rooms for improvements

MAI gathered from the fields mentioned before will be selected and analysed by respective departments critically to ensure operation efficiency and all requirements are met. For instances, data that needed to fulfil customer requirements are data that would help to measure customers' safety and convenience.

Any data selected would also be examined at the usability aspect so that the data would be useful, reliable and sufficient enough to lead for fruitful discussions and conclusions. Undeniably, current information and communication technology helps Asia Highway not just to achieve paperless environment but also efficient and effective environment when redundancies are eliminated. The application of real-time information across the nation has also facilitates fast, timely and effective response to customers.

In this company, every department is responsible to measure, track and monitor their MAI and this requires non-accounting background staffs to possess knowledge on how to use MA tools and techniques as well as MAI. This would ensure smooth daily operation and continuous improvement and innovation can be initiated based on information collected.

MAI USAGE IN INNOVATION PROCESS AND CONTINUOUS IMPROVEMENT

Innovation has been emphasised in the 'Asia Highway's Group Competency Model' and the "Company's Competency Matrix". Middle management and senior executives are expected to possess behavioural competencies to enable them to execute their tasks efficiently. Those competencies are grouped in three core categories which are 'managing business', 'managing self' and 'managing others'. The ability to innovate and having customer focus orientation are included under 'managing business' category.

In Asia Highway, there is an initiative called Innovative and Creative Circle (ICC) where front liners involved will be put as team of six to eight members. During the circle, they will work together to seek solution for a problem that happened in their working place.

Furthermore, Asia Highway also appreciates fresh ideas from its employees. Another facility provided is "Talian Sahabat". This is a communication channel for employees to raise any ideas, suggestions and even complaints about their workplace. Issues that can be raised up through this channel are like working environment and health. A telephone line and an email address have been dedicated for this purpose and further investigation will be conducted.

This initiative has been an excellent way for the front- liners to communicate with the management. In relation to these aspects, MAI gathered will be utilised in the innovation and improvement initiatives that would later help Asia Highway to deliver values to customers.

Data are analysed, solutions are formulated based on the five customer perspectives identified in the BSC's Customer Perspective established before. Information and data from respective measure will be analysed and root caused from the problem will be identified.

Any solutions suggested for the problem will be reviewed at departmental and division level to determine its suitability and viability before any recommendation is made to the top management for execution. Examples of MAI collected and improvement initiatives done are explained further.

Safety – Black Spots Identification and Asia Highway Ronda Response Time

Asia Highway is giving serious attention to safety by undertaking initiatives such as identifying the black spots location, which is the location with high accidents rates. Frequencies of accidents are also being studied. Data such as traffic flow data, pavements condition index and slopes condition index were analysed to determine preventive and corrective measures to improve safety level along the highway by installing safety equipment like warning signs, transverse bars and ‘New Jersey’ bars at the road side.

Asia Highway Ronda provides emergency and free rescue services to customers. In 2010, Asia Highway improved the responsive time of Asia Highway Ronda from 20 minutes to 15 minutes. To facilitate the improvement process, Asia Highway measured and analysed data such as Asia Highway Ronda responsive times based on location, time and nature of incident as well as number of events attended by Asia Highway Ronda. These data and information are collected from daily events recorded in Asia Highway Ronda Reporting System.

Improvements were done by increasing the number of patrolling loops, communication system enhancements and conducting post-mortems sessions with Asia Highway Ronda people. Tow trucks had been added to the Asia Highway Ronda vehicles to assist patrolling services for faster clearance and minimising congestion due to any breakdown or accident incidents.

Service Level – Travel Time Analysis (TTA) and Electronic Toll Collection (ETC)

As Asia Highway deals with traffic patterns and capacity optimisation, hence statistical and trend analysis are among tools utilised to analyse those data. MAIs studied that relate to improving service level are hourly traffic pattern, travelling pattern by customers and service flow rate that measures congestion level on the expressways.

Using these MAIs, one of the innovative solutions initiated is the “Travel Time Advisory” (TTA) that was initially developed to improve the traffic flow and reduce road congestions during festive seasons.

The process of developing the TTA involved the extracting the traffic out from city centre plazas to from previous year’s festive seasons. Afterwards, the data extracted will be classified on two groups; short-distance or long distance travel. Subsequently, the traffic volume will be extrapolated and comparison with mainline capacity will be done. Asia Highway will identify the hotspots as well as where traffic capacity is expected to exceed Asia Highway current capacity. As a result, a travelling timetable was developed mainly for users from the city centre and traffic flow on the mainline will be staggered according to their distances.

Meanwhile, an example of improvement initiative set for toll management is the introduction of “Electronic Toll Collection” (ETC). ETC has been helping Asia Highway to reduce congestion at toll plaza using the Touch ‘N’ Go and “Smart Tag” systems. The level of ETC usage has been increasing in NSE stretch from 43% in 2006 to 53% in 2010.

Operational Efficiency – ‘TEMAN’, ‘EFFORTS’ and ‘LOMS’

Asia Highway spent almost RM500 million to maintain the expressways. Cost, designed and resource optimisation were achievable due to preventative maintenance strategy rather than curative strategy. Asia Highway is implementing Enterprise Risk Management (ERM) approach in identifying, analysing, prioritising and monitoring the risk on the utilities and facilities provided along the highway. This can be seen clearly through the structured maintenance regime initiated to reserve major assets.

A system named ‘Total Expressways Maintenance Management System’ (TEMAN) was established with the purpose to facilitate the management control of highway activities. Using data stored and analysed in TEMAN, initiatives and research could be held to enhance the quality of major assets along the highway.

Next, to ensure smooth sailing and efficient operation at toll plazas, there are initiatives introduced from Six-Sigma approach such as “Electronic Forms for Toll” (EFFORT) and “Lanes Opening Management System” (LOMS).

MAI used in the process of initiating EFFORT was the toll forms utilization data among the toll gate staffs. Asia Highway realized that there were so many forms to be completed by toll gate keepers that were time consuming. Therefore, EFFORT was initiated to overcome this problem. EFFORT is a web-based application that consolidates all toll-related forms electronically. This application also enables shift management to be done on the line. This system is so efficient because due to reduction of toll operating costs and expenditures as well as saving time. It is reported that this initiative had derived benefits of RM1.5 million approximately in a period of 12 months.

For the meantime, LOMS is a system that managed toll plaza lanes opening. This system uses information and traffic data for each toll plaza in order to plan how many lanes need to be opened at one time. Therefore, toll tellers can be optimized and overtime costs are reduced. This improvement activity resulted in total of RM2.9 million savings in total in a period of one year.

Convenience – Comfortable RSA

Customer convenience is essential to ensure that customers would have positive travelling experience every time they use Asia Highway’s expressways. Furthermore, non-stop driving for long hours is dangerous due to fatigue and may result in accident. Thus, one aspect that needs to be taken care is providing sufficient, clean and tidy amenities at the Rest Service Areas (RSAs). RSAs and lay-bys are essential so that drivers can rest after long hours driving. Hence, Asia Highway has been providing RSAs and lay-bys at an interval of 50-80kms for RSAs and 20-40kms for lay-bys. Currently, there are 4 overbridged restaurants, 24 RSAs and 43 lay-bys along the expressways.

Interestingly, all RSAs and lay-bys had been designed and upgraded according to a specific theme. For example, the RSAs in Area A were

designed based on “The Cultural Diversity Gateway” concepts since those RSAs are located near the International Airport. Meanwhile, RSAs located near the Area B were designed based on “The Riverside” theme. This concept turned the RSAs to be an attraction for tourist travelling to the north. Moreover, those RSAs and lay-bys are spacious with open-air concept that allows natural lightning and air ventilation so that optimum maintenance could be done easily and reducing operating costs.

Data and information used to ensure RSAs, Lay-Bys and OBRs are clean and comfortable are like feedbacks from customers, CSI survey, stall grading by Ministry of Health as well as toilet grading.

Value for Money – Customer Loyalty Cards

Asia Highway’s innovation in creating value for money is by introducing programmes to engage with customers and retention program to increase customer satisfaction. Examples of these programmes are the Asia Highway Miles and Asia Highway Track cards. Asia Highway Miles offers benefits and privileges to the customers on point and reward basis.

Customers with Asia Highway Miles card are entitled to discounts and privileges from selected merchants such as up to 30% discounts. Meanwhile, Asia Highway Track is a prepaid card services provided for fleet operators. This card enables fleet operators to save money due to discounted rates given and the ease of payments and billings. Operators can easily upload the value on the Asia Highway Track using the portable devices provided therefore missing cash problem faced by the operators could be solved.

People might think that these two cards are just ordinary cards. However, these two cards actually function as a powerful tool to keep track customers usage trends on the highway. From the Asia Highway Miles card for instance, Asia Highway can keep track on the travelling frequency of a customer as well as consumption patterns on the selected merchant participating in the Asia Highway Miles reward program.

Asia Highway Miles card also possess each of customers’ background and demographic information that are very useful for Asia Highway to conduct customers analysis and develop any appropriate business strategies.

All these data are stored in Customer Database Management System (CDMS) for continuous customer engagement and retention programs in future.

IMPACT ON ASIA HIGHWAY' BUSINESS PERFORMANCE

Subsequently, this section will be highlighting Asia Highway's performance in terms of process, safety and customer satisfaction as a yardstick to measure the non-financial impact of values delivered to customers.

Financial Performance

From the 5-year comparisons, it could be seen that Asia Highway had been successfully maintaining a positive growing trend of its toll collection. These positive trends of toll collections can also be translated to same patterns of revenue growth of the company.

The main reason behind higher toll collection and revenue growth in those five years is new expressways taken which were ELITE, LINKEDUA and KLBK. Meanwhile, there was 5.4% growth in revenue due to higher toll collection and revenue generated from new subsidiaries that time named INIPPL as well as Asia TurusTeknologi Private Limited and Asia Touch 'N' Come Private Limited as an associate company. These positive growths of toll collections and toll revenues are further translated into the same pattern of profit before tax (PBT).

A total saving of RM15 million was reported in 2010 from the continued execution of Project 'Boosting Efficiency Transforming Attitude' (BETA) that started in 2009. As the name suggests, Project BETA was first implemented to improve various systems and processes within the organization in terms of efficiency. A further saving of RM11.3 million was achieved in 2010 through several improvements conducted under by eleven Six Sigma projects during the year.

Process Performance

After the sluggish economic situation in the country in 2009, traffic growth seemed to be increasing and exceeded expectation in 2010. It is believed that this positive growth was attributed to the development of surrounding areas and higher travelling due to the improved economy.

Asia Highway also considered that the introduction of third lane widening project at the southern and northern stretches and improvements implemented on the traffic management such as TTA contributed to the improved traffic management thus attracting additional traffic into Asia Highway expressways.

Another positive improvement recorded was the ETC penetration rate. The number of people using ETC seems to be higher year by year. This could be a result from various initiatives conducted to promote the use of Asia Highway and Touch 'N' Go cards, replacing cash lane to full ETC lanes and more ETC lanes were built. Higher ETC penetration demonstrated that Asia Highway efficiency has been improving for the better since ETC would reduce congestion problem at the toll plaza.

Full implementation of ETC system was introduced at Linkeduas in July 2010. This resulted in increased lane capacity at least 50% to allow greater throughput at the toll plaza. This full implementation also allows lesser manpower to be employed at Linkeduas plaza as 10% of staffs was reduced at the end of 2010. Asia Highway also saves about RM54 a day when a person migrated from paying by cash to ETC.

Safety Level Performance

It is something interesting to note that numbers of accidents happened in Asia Highway actually represented 2.1% of total accidents in Malaysia. Furthermore, the number of accidents involving express buses and lorries travelling on the NSE stretches reduced to just six accidents per 1,000 vehicles, compared to seven accidents per 1,000 vehicles in 2009.

Asia Highway believes that the road safety initiatives done by the company have been contributing to the reduction of accident and fatality

rate along the expressways. The initiatives includes the installation of various safety measures along the highway such as rumble strip, CCTV, curve widening, high skid resistance transverse bar and many road signs and markings.

The traffic-monitoring centre in Subang also played important role in enhancing safety level along the expressways together with the well-trained Asia Highway Ronda staffs. They are equipped with PROMPTS system that allows real-time reporting for Asia Highway Ronda. Asia Highway Ronda patrols are in their best position to respond as quickly as possible with customers on the highway. Asia Highway Ronda managed to reduce their response time from 23 minutes in 2007 to 15 minutes in 2010.

Customer Satisfaction Performance

Asia Highway has been recording an increase in the performance based on the “Customer Satisfaction Index” (CSI). This survey covers aspects such as highway management, toll plaza management, patrolling services as well as RSAs management and lay-bys management. In the recent CSI conducted in 2010, Asia Highway – Central region managed to be the winner for based on CSI scores for three categories which are ‘Highway Management’, ‘RSAs Management’ and ‘Lay-By Management’.

Asia Highway also managed response to the customers in less than 7 days and the number of cases responded with more than 7 days was reduced to only 2 cases in 2010. In terms of solving customers’ problem, in 2010 there were 2,534 cases solved in less than 30 days and only 179 cases solved in more than 30 days compared to 2,188 cases solved within time frame and 563 cases solved in more than 30 days.

DISCUSSION

From this study, it is clearly evident that Asia Highway is implementing management accounting practices throughout its organisation especially when it comes to operational wise and developing marketing strategic approach. Asia Highway managed to prove that management accounting provides powerful tools that would help the company achieve its goal that has been planned before through its BSC and Strategic Map. These are powerful tools that helped to steer Asia Highway excellent performances.

Management accounting tools like customer profitability analysis, trend analysis, and association analysis is proven to be beneficial to marketing and strategic managers. This is due to these methods to identify patterns of behaviours among customers so that company could categorise them based on segments.

Asia Highway successfully utilised management accounting information not just to deliver value to customers in their continuous improvement and innovations solutions but they indirectly managed to optimise all available resources so that it is not just customers who benefit but also at the end of the day, the shareholders.

From the financial and non-financial data presented, we can see conclude that Asia Highway is doing well in its business. The traffic growth seems to be healthy and keep on expanding. Moreover, it is undeniable that Asia Highway is performing well too in non-financial measures for instance, the company managed to have low accident rates on its expressways.

Asia Highway remarkable accomplishment in optimising MA tools and information is a proof that management accounting practices in this country can be better off. Asia Highway has shown to us that MA is beyond budgeting and costing. Thus, Asia Highway achievement in previous NAFMA award is undeniable.

CONCLUSIONS

This study has been conducted to examine how management accounting practices has been helping one of the largest expressway concessionaires in Malaysia, Asia Highway to create values to its customers.

MA Techniques and Tools Used to Deliver Value to Customers in Asia Highway

From the study, it can be identified that Asia Highway is practicing various MA techniques and tools in the company's operation. In Asia Highway, MA is not limited to the management accountants only but MA knowledge is required for middle management team as well as the top

management because they deal with huge amount of data in operating all the expressways.

Moreover, Asia Highway is not just practicing the basic practice of management accounting in its daily operation such as budgeting but Asia Highway also utilized advanced management accounting techniques and tools such as value engineering, Six Sigma and BSC. BSC itself has been used as a very important tool to set Asia Highway annual strategic direction and measure performances while Six Sigma facilitated Asia Highway to identify inefficient used of resources and set up cost savings initiatives in the company.

Additionally, Asia Highway used various kind of analysis to analyse data and information. Results from these analyses are useful to identify customers according to their demographic and geographic segmentation. These segmentations allow Asia Highway to cater their customers according to their own needs. Asia Highway also can tailor specific marketing programs, innovations and improvement initiatives based on the market segmentation.

Therefore, based on the IFAC management accounting model, it can be said that Asia Highway has reached the stage three and four of the model. These are stages where management accounting practices help to eliminate wasted resources and creating values for the stakeholders.

MA Information utilised to Create Value for Customers in Asia Highway

Asia Highway deals with huge amount of data in its operation where data and information come from traffic on the road, toll plazas penetrations, RSA, lay-bys and OBRs operation, environmental features like slopes, pavements, drainages as well as data from thousands of assets installed on the expressways.

These data and information are essential for Asia Highway to make sure that the company's strategic objectives are fulfilled. It is also important because these data allow Asia Highway to monitor operational efficiency in order to deliver quality services for customers.

Based on the customer focus perspectives, Asia Highway has created many innovation and improvement initiatives such as Asia Highway Ronda, Asia Highway Miles and ETC lanes. This is an area where MA information deemed to be critical. Analyses conducted on information and data gathered like customer feedbacks would enable Asia Highway review any problems occurred in real-time manner. Therefore, any casualties happened along the expressway can be quickly addressed and customer safety and convenience along the highway are guaranteed.

Impact of the Efforts Implemented on Asia Highway's Business Performance

Finally, this study examined the impact customer-centric efforts implemented in Asia Highway financial and non-financial performance. From the financial perspective, it is evident that Asia Highway managed to maintain a positive growing trend of toll collections and revenues for five years in a row.

In terms of process performances, Asia Highway also recorded increments in traffic growth in the past five years due to several reasons for instance more satellite towns were opened along the highway stretches and improvements made on the mainline management such as the introduction of lane widening and TTA that attracted extra traffic.

From safety performance aspect, it was found that accidents happened in Asia Highway represented a very minimal percentage of total accidents happened in the country. It is believed that safety initiatives and measures installed along the highway stretches helped to keep the number as low as possible.

Besides, Asia Highway also performed well in ensuring customer satisfaction. Asia Highway scored high marks 'Customer Satisfaction Index' conducted in 2010 especially in the highway management, RSAs management and lay-bys management. Asia Highway also has increased its ability to response faster to any cases reported to them.

In conclusion, it is strongly agreed that Asia Highway has been successfully practicing MA in managing the company operation and

its expressways. MA has been playing important roles in ensuring that expressways are operating efficiently thus customer safety and convenience are guaranteed while driving on the roads. These factors contribute to the positive growth of Asia Highway financial Asia Highway and in the same time, values are also well delivered to the customers.

Asia Highway has shown to us that MA is always relevant in a company especially in setting corporate mission and goals. In Asia Highway, MA is no longer belong to management accountant only but all the management team members regardless of their background and MA is not used to record scores but it is very critical in decision making processes.

LIMITATIONS

This study has a few limitations. First, since this is a single case study, the result of the case study is centred on Asia Highway. Thus, it is difficult to generalize the result on other settings and contexts.

Secondly, the study only focused on the management accounting practices in delivering customer value in Asia Highway. Nevertheless, there are many other tools that can be used to serve customers' needs and increase their satisfaction. Moreover, this study is just examining Asia Highway excellence in practicing management accounting and maintaining their customers without looking at the organisation as a whole.

Moreover, some of the data and information gathered in during the study are highly classified and could not be disclosed to other parties easily, therefore some data cannot be obtained or analysed further.

RECOMMENDATIONS FOR FUTURE RESEARCH

It is suggested that for future research, other method such as surveys and questionnaires could be applied in similar studies. This would enable further and deeper understanding on the subject being studied. Future researchers might be interested to look at specifically on how specific tools managed to ease Asia Highway's operation empirically. Besides, empirical studies could

be conducted on the level of acceptance of new technique of management accounting being implemented in the company.

Furthermore, this study of management accounting practices could be extended on wider context of Asia Highway's organization as a whole to see whether management accounting practice really helps Asia Highway in other areas. It could be interesting if similar studies can be done on other concessionaires so that comparison or benchmarking can be made. Extending this study into different settings and different organization would enrich information and understanding on the management accounting itself.

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