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MANAGEMENT ACCOUNTANT'S DRIVERS AND PERCEIVED BARRIERS TOWARDS SUSTAINABLE DEVELOPMENT

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ABSTRACT

CIMA (2011, p. 2) suggest that management accountants must now take a more active role in sustainable development. The CIMA report on “Sustainability and the role of the management accountant” focuses on the management accountants’ role within organizations and the active part they take in decision-making and strategy formulation. The report presented the idea that management accountants can play a more active role in strategy formulation around sustainable development. While present opinions call for management accountants to become active decision facilitators within organizations. Research shows that little attention has been focused on sustainable development, management accounting practices and the engagement of management accountants in the organizations. Management accounting practices have been and are still guided by underlying values of economic prosperity. Several reasons exist as to why management accountants should engage in sustainable development: **First** being emerging jurisdictional requirements which include sustainable development requirements for organizations; **Second** being calls from sovereign leaders that organizations should have a greater awareness of sustainable development; **Third** reason is there is social change influencing society’s perceptions on sustainability; **Fourth** reason is that there have been more calls for accountants to engage in sustainable development practices. It is at this point where the researcher dwells into investigating the five major perceptions of management accountants that have of their roles in accounting for sustainable development and subsequently justifying five major perceived barriers to their involvement in management accounting practices that involve sustainable development practices.

Keywords: Perception, Barriers, Sustainability.

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NOTE: The report contains **bolded words** for easy read and *cursive words* to help keep track of main points. It also contains images of diagrams and charts to promote visual learning.

OVERVIEW

The **Chartered Institute of Management Accountants' (CIMA)** is stressing on the importance for management accounts to start allocating greater proportion of their time, energy and working role towards 'accounting for sustainable development' - instead of merely fulfilling the traditional goal of being a financial specialist.

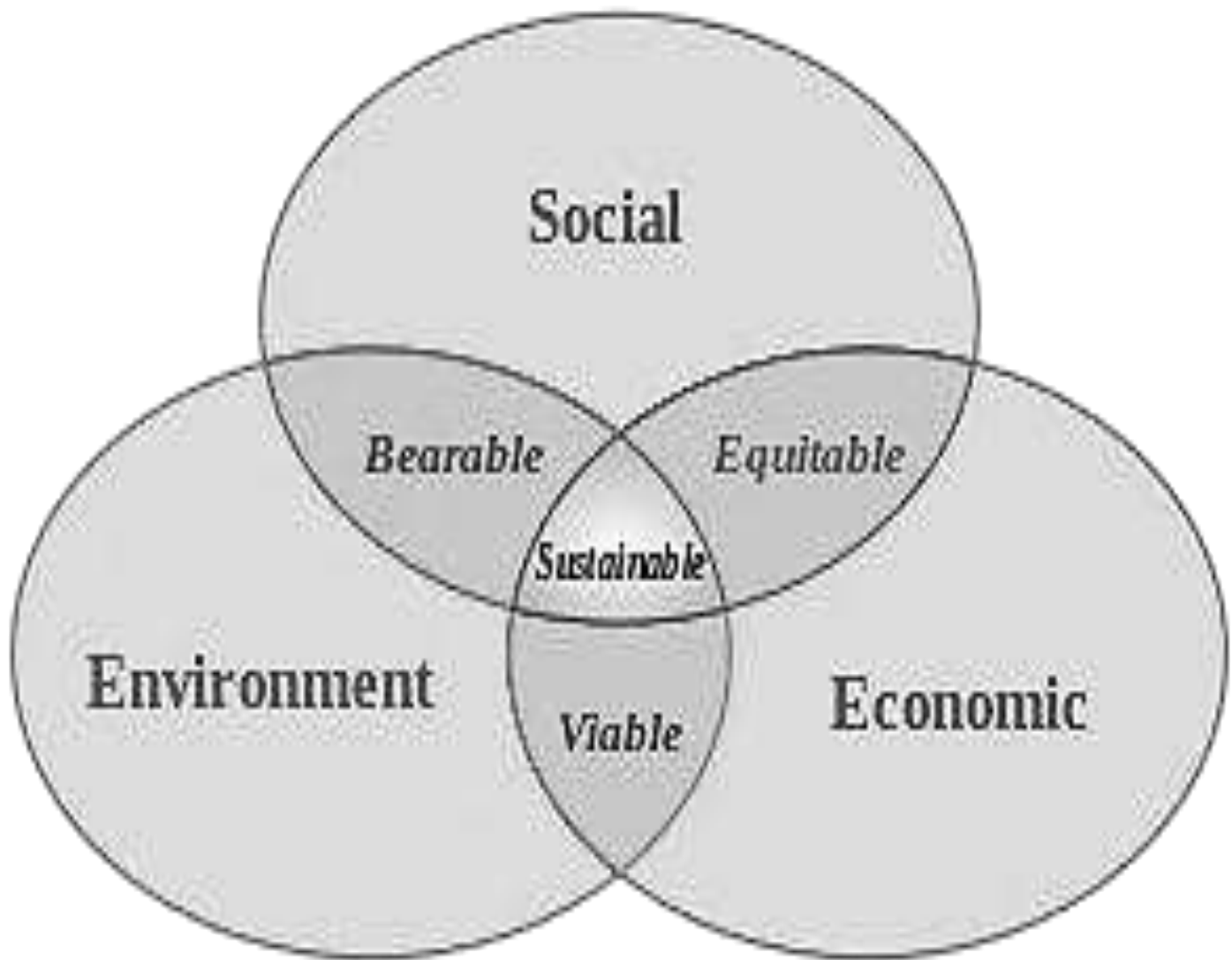
This is because, according to CIMA, traditional roles have evolved and that management accounts are seen to be potential individuals who possess the capability to channel and transform their 'traditional strategy formulation and decision making' tactics towards 'implementing and executing sustainable strategies'- such as monitoring and managing non-traditional data, and, producing integrative reports of financial and non-financial data. This way, management accountants become facilitators of sustainable development and strategy setters; to guide strategic decision making in organizations that have adopted sustainability measures.

Through this change, CIMA believes that the essence of management accounting performed by management accounts shall always abide by the rules and values of economic prosperity that preaches on the importance of effective and efficient usage of natural resources.

CIMA's vision and effort integrating sustainability in the role of management accountant have attracted many accountants to become acceptors and collaborates of sustainability, but there is high tendency of these accountants not completely accepting and dedicating every aspect of their role towards sustainability- as they are comfortable practicing traditional goals and unable to see sustainability as the primary moral and economic imperative of business opportunities and risks. This results in management accountants having different perceptions towards their role in accounting for sustainable development.

Therefore, it is vital to encourage and ignite sense of 'want' and 'interest' in management accountants' to adopt, implement and execute their role towards sustainable development perfectly and to ensure they retain their role. This can be performed by upgrading their perceptions towards motivational attributes of sustainable development. **There are several motivational factors (drivers) contributing to develop management accountant's role towards sustainable development. 5 factors are critically discussed below.**

Exhibit 1.0: **Sustainability Model**



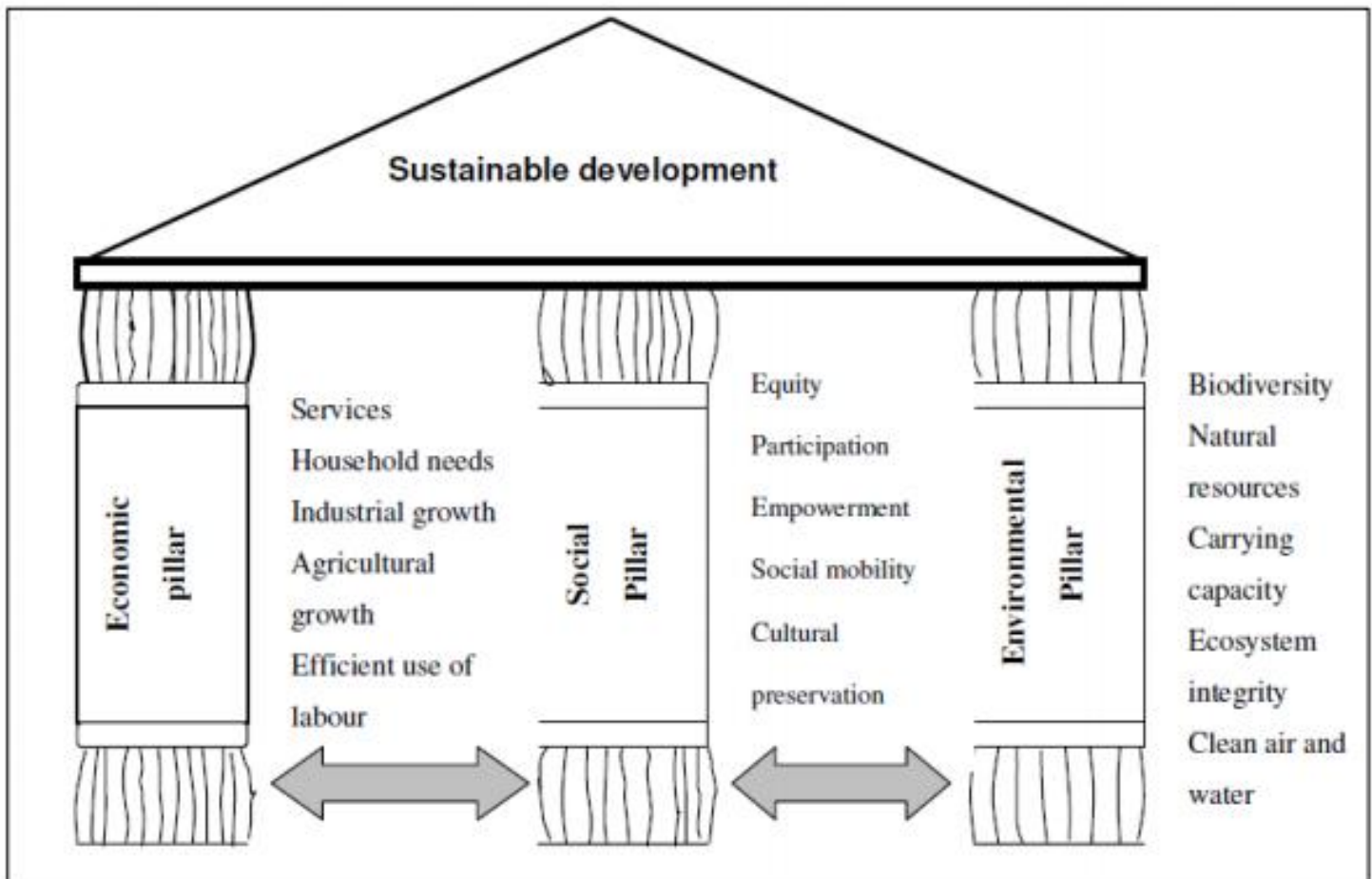
Source: Govender, 2016

SUSTAINABILITY

TRIPLE BOTTOM LINE

Sustainable development. defined as the development that meets the needs of the present without comprising the ability of future generations to meet their own needs. It can be illustrated by 3 aspects of TRIPPLE BOTTOM LINE: Economical, Social and Environmental.

Triple Bottom Line Illustration



Source: Govender, 2016

LIST OF EXHIBITS

Exhibit 1.0: Sustainability Model

Exhibit 2.0: EMAS

Exhibit 3.0: EMAS Framework

Exhibit 4.0: EMAS Overview

Exhibit 5.0: Employee Retention

PART A

THEORY

Management Accountant's Perception of their Role in Accounting for Sustainable Development.

QUESTION 1

PART A

Discuss any FIVE (5) perceptions of management accountants that have of their roles in accounting for sustainable development?

NOTE: This question is answered in the understanding of:

What re the Factors or Drivers contributing to Develop or Enhance a Management Accountant's Role towards Accounting for Sustainable Development so that Management Accountant's can do their Job Perfectly.

1.0 Drivers for Sustainable Development

1.1 Growth of Newer Sustainability Systems

Growth of newer system such as 'Environmental Management Accounting (EMA) System' (EMAS).

(NOTE: Please see Appendix before reading this section)

First, EMAS allows management accountants to gain complete, reliable, accurate and precise information regarding the cost effectiveness of environmental performance which is imperative to managers to help them make better decisions. Also, measurement and reporting of EMAS information improves company image with stakeholders; as it reveals true environmental costs and benefits incurred by organization. (Govender, 2016)

Second, EMAS improvises costing analysis in three ways.

First, **EMAS allows management accountants to performs Life Cycle Assessment (LCA)** which pertains in examining and evaluating environmental influences of product or activity across its entire life cycle from raw materials until disposal and assigning measures of monetary value to environmental consequences- which is lifecycle costs. Based on Govender (2016) and Qian, Burritt and Chen (2015), it identifies and quantifies materials used, energy and wastes released to the environment. Also, assesses environmental impact and dictates opportunities available to cater improvement by generating data on environmental releases and their effects. This allows management accountants to plan, control and organize pollution prevention opportunities to reduce environmental costs on products.

Second, **Activity Based Costing (ABC)**- which encourages management accountants to discover environmental-related cost for waste disposal, water, energy and environmental staff salaries. These are usually allocated as overheads and hidden from managers to display 'cost-reduction'. However, ABC creates relevant and reliable costing that reduces cost, promotes cost-effective product pricing and supports pollution prevention projects. (Govender, 2016)

Third, **Flow Cost Accounting (FLC)** illustrates business as a material flow system with material and energy flows moving through business (value creating system). Incorporating EMAS to FLC, it assists management accountants perform estimates of wage costs, analyze potential production cleanliness at plant and evaluate causes and quantification of waste, emissions and energy streams volume. It not only examines material flows from raw materials into finished product but computes material losses like, chipping, scraps, reject, expired and damaged products that are economically and environmentally undesirable. (Govender, 2016)

Thus, in management accountant's perception, EMAS is a driver of sustainable development as it promotes cost reduction, cleaner production, better product pricing and increased shareholder value from launching environmental-friendly products and executing less harmful corporate activities- improving organization's image and reputation.

Exhibit 4.0: Environmental Management Accounting System Overview



Source: Govender, 2016

Exhibit 2.0: Environmental Management Accounting System for Sustainable Development

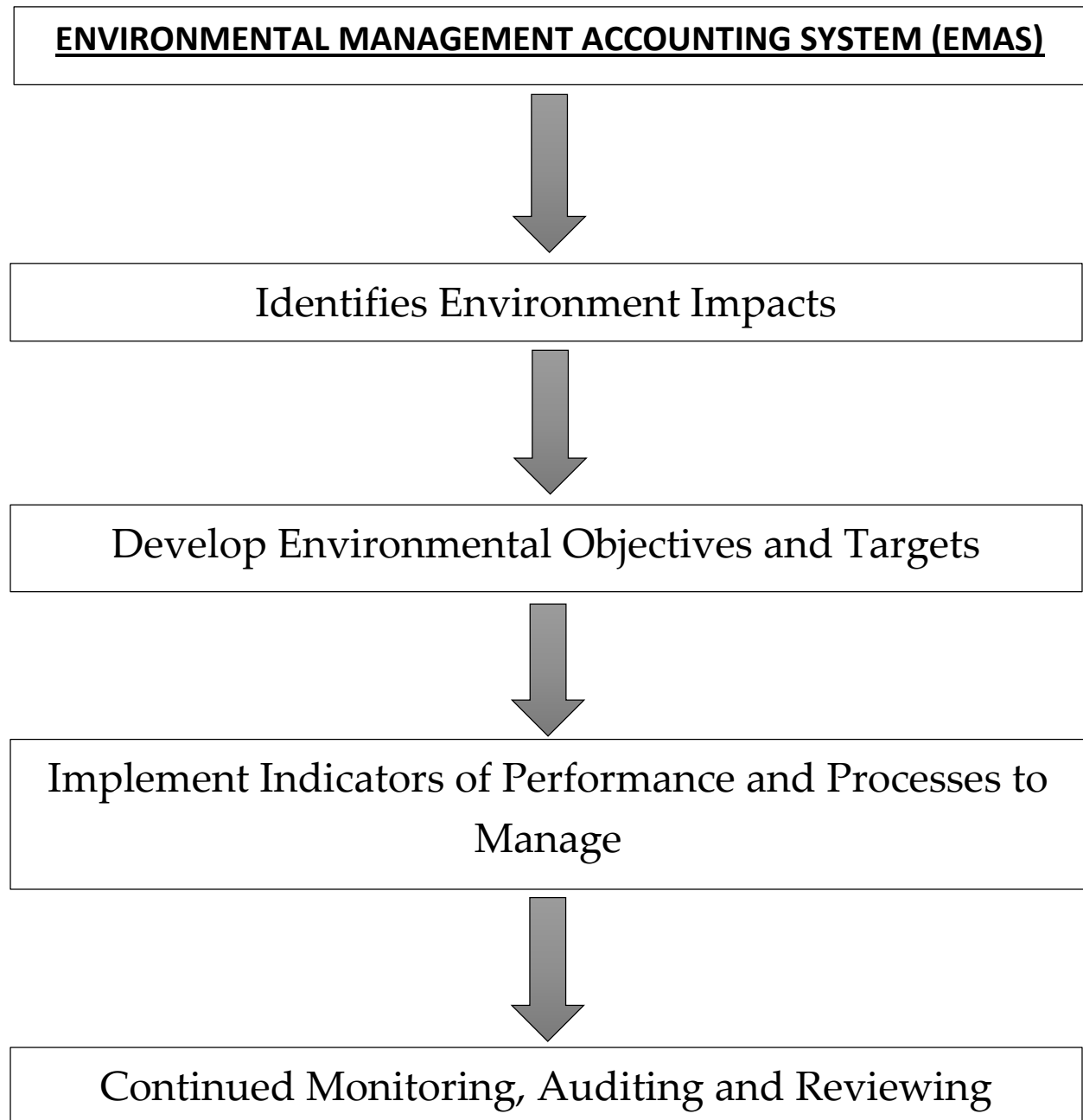
Accounting in Monetary Units		Accounting in Physical Units	
Conventional Accounting	Environmental Management Accounting		Other Assessment Tools
	MEMA Monetary EMA	PEMA Physical EMA	
DATA ON THE CORPORATE LEVEL			
Conventional bookkeeping	Transition of environmental part from bookkeeping and cost accounting	Material flow balances on the corporate level for mass, energy and water flows	Production planning systems, stock accounting systems
DATA ON THE PROCESS/COST CENTRE AND PRODUCT/COST CARRIER LEVELS			
Cost accounting	Activity based material flow cost accounting	Material flow balances on the process and product levels	Other environmental assessments, measures and evaluation tools
BUSINESS APPLICATION			
Internal use for statistics, indicators, calculating savings, budgeting and investment appraisal	Internal use for statistics, indicators, calculating savings, budgeting and investment appraisal of environmental costs	Internal use for environmental management systems and performance evaluation, benchmarking	Other internal use for cleaner production projects and ecodesign
External financial reporting	External disclosure of environmental expenditures, investments and liabilities	External reporting (EMA-statement, corporate environmental report, sustainability report)	Other external reporting to statistical agencies, local governments, etc.
NATIONAL APPLICATION			
National income accounting by statistical agency	National accounting on investments and annual environmental costs of industry, externalities costing	National resource accounting (material flow balances for countries, regions and sectors)	

Source: Govender, 2016

Exhibit 3.0: Environmental Management Accounting System Framework

Environmental Management Accounting (EMA)					
		Monetary Environmental Management Accounting (MEMA)		Physical Environmental Management Accounting (PEMA)	
		Short Term Focus	Long Term Focus	Short Term Focus	Long Term Focus
Past Oriented	Routinely generated information	Environmental cost accounting (e.g. variable costing, absorption costing, and activity based costing)	Environmentally included capital expenditure and revenues	Material and energy flow accounting (short term impacts on the environment - product, site, division and company levels)	Environmental (or natural) capital impact accounting
	Ad hoc information	Ex post assessment of relevant environmental costing decisions	Environmental life cycle (and target) costing Post investment assessment of individual projects	Ex post assessment of short term environmental impacts (e.g. of a site or product)	Life cycle inventories Post investment assessment of physical environmental investment appraisal
Future Oriented	Routinely generated information	Monetary environmental operational budgeting (flows) Monetary environmental capital budgeting (stocks)	Environmental long term financial planning	Physical environmental budgeting (flows and stocks) (e.g. material and energy flow activity based budgeting)	Long term physical environmental planning
	Ad hoc information	Relevant environmental costing (e.g. special orders, product mix with capacity constraint)	Monetary environmental project investment appraisal Environmental life cycle budgeting and target pricing	Relevant environmental impacts (e.g. given short run constraints on activities)	Physical environmental investment appraisal Life cycle analysis of specific project

Source: Govender, 2016



1.2 Enhances Organizations Image

Incorporating sustainable practices into the role of management accountants encourages them execute vital activities that can improve entire organization's brand name and image.

First, **raise sustainable business as a strategic issue**. Based on Aleksandar and Milovanov (2017), management accountants can identify environmental and social influences that effect company's capability to create value and correlate these challenges to corporate strategy, business model, operation license and performance outlook through planning process- in the context of external reporting environment. Then, they can establish budget procedures and timetables to coordinate short term future plans from 'sustainability' section of business by evaluating environmental expenditures. And, the impact of sustainability and expenditure issues can be depicted in robust business terms explaining how and when they could affect business. For example: using scenario planning or modelling to forecast impact on value.

Second, **collect, analyze and measure sustainability data**. Management accountants can develop 'Key Performance Indicators (KPI) to measure effectiveness and ability of company to execute strategic and sustainable goals despite using resources efficiently and accounting for planning boundaries. Also, to consider scope of environmental and social influences towards management's compensations, suppliers and value chain. To achieve this, sustainability information measurements and quantification approaches can be executed through application of management accounting tools and techniques such as "lifecycle costing", "activity-based costing", "flow cost accounting", "total cost assessment" and "sustainability balance scorecard" - all of which fulfil and evaluate costing analysis, investment appraisals and performance management important for integrating sustainability matters into decisions. These quantification and qualification strategies imply how business contributes to value creation, cost reduction and revenue generation- improving its reputation in marketplace. (Aleksandar and Milovanov, 2017)

Third, **integrate sustainability information analysis into decision making process and develop reporting strategy**. Management accountants can communicate these sustainability initiatives to managers and relevant teams by producing decision-relevant reports and developing robust system and processes- all of which shall be disclosed with relevant financial and non-financial data through reporting process. (Aleksandar and Milovanov, 2017) Thus, this shall positively impact all stakeholders of company where they shall be inspired to see business effort and sacrifices contributing towards sustainable development and overall society betterment as they see sustainable expenditures as prudent and intelligent investment decision- where employees will work more efficiently, investors attracted to invest and customers with more trust and loyally supporting firm by repeated purchases of product. All this, improves brand image and company image of 'going green'- motivating management accountant to do their job perfectly to develop sustainability. (Aleksandar and Milovanov, 2017)

1.3 Access to Financing Capital

When businesses' reports dictate budgeting, product pricing, investment appraisals and strategic planning regarding sustainability impacts and measures for further decision making, it instantly displays how company is considering sustainable strategies towards value creation, cost reduction, revenue generation and intangible benefits that not only reflect interconnectivity of triple bottom line (social, environmental and economic) but how company stands attractive and builds going green reputation in marketplace. It shows company has implement management and cost accounting effectively towards sustainability measurements- attracting financial institutions to have greater willingness in creating credit to support sustainable responsibility of organization.

Management accountants have many perceptions regarding this that motivate them to adopt sustainability roles perfectly.

First, **banks are interested in predicting future cash flows and returns** using analytical methods to confidently allocate funds for company's social needs. Thus, incorporating financial and non-financial information regarding environmental and social aspects is important to allow banks evaluate business sustainability activities and performance and easily create credit. (Govender, 2016)

Second, **banks oblige organizations to report self-regulation on sustainability issues** in terms of their project finance and corporate activity details to understand environmental, social, governance and ethical issues related to product and services. This encourages management accountants to design sustainability report according to sustainability standards to ensure there are no sustainability risks which make banks reluctant to create credit due to inability to sufficiently mitigate risks through advisory support or loan conditions.

Third, **banks are interested in opportunities** that allows it to finance sustainable energy, other projects and contribute to pooled sustainable funds. According to Govender (2016), They are lesser reluctant and more willing to allow business access financing capital for projects and operations that have direct sustainability dimension or satisfy minimum sustainability criteria. This is because they are interested in sustainability investing and to integrate sustainability issues into routine investing to eliminate all risk associated with non-sustainable investments. This motivates management accountants to report how sustainability cost shall impact revenue generation- despite forecasted profits may be low, knowing that banks view additional expense of sustainability measures as long term ethical and profitable investment rather than short term additional cost and expenditure burden- and shall allow business to access financing capital. Banks are confident that sustainable business shall generate profits in long term and inherit less risk in paying returns. (Govender, 2016)

Thus, all these are positive perceptions of management accountants on banks creating credit and it is a motivation for them to adopt sustainability roles perfectly.

1.4 Shareholders Seeking Investment

These shareholders are social and environmentally responsible investors who allocate high consideration on financial and non-financial data in investment decision-making and can get utility above traditional investors whom achieve by basing their choice mainly on financial data. This is because, these investors have understood that companies which adopt sustainability into their core business strategies and decision-making processes possess ability to earn higher than average stock market returns.

According to Galant and Cadez (2017), these are firms with communitarian ideology that indulge in sustainability practices which experience higher corporate financial performance (CFP), where they have understood that sustainability activities are supposed to be undertaken as long-term ethical and profitable investments rather than short term additional cost and expenditure burden- as it exists on the motive of creating betterment of society before improving CFP.

According to Khurshid (2017), this builds confidence in managers to prepare and record financial statements in true and fair view despite high sustainability costs may reduce probability figures initially. This is because, they are inspired to showcase their efforts and sacrifices contributing for society's betterment. This indirectly motivates investors to invest as they gain trust in the company and see lower profits as the beginning of greater CFP in future.

This is because they see greater sustainability expenditures as prudent, and intelligent investment decisions which could push up the price of stock in the near future- allowing them to maximize shareholder wealth. (Khurshid, 2017)

Thus, Galant and Cadez (2017) opines that sustainable-oriented investors support sustainable investments as they believe that 'risk requires reward. Not only that, sustainable strategy that incorporates social, environmental, and economic issues can lead to reductions of the operational and financial risks- causing suitable sustainable performance showcasing how management accountants deliver effective financial planning. This reduces sustainable crisis such as clean-up costs, environmental accidents and environmental accidents that could negatively influence firms cash flows- allowing goodwill generation and company information flow- all of which increases returns on shareholder's investment.

1.5 Employee Retention

Management accountants have perception that sustainable development give organizations higher ability to retain employees. This motivates them to perform their sustainability roles perfectly.

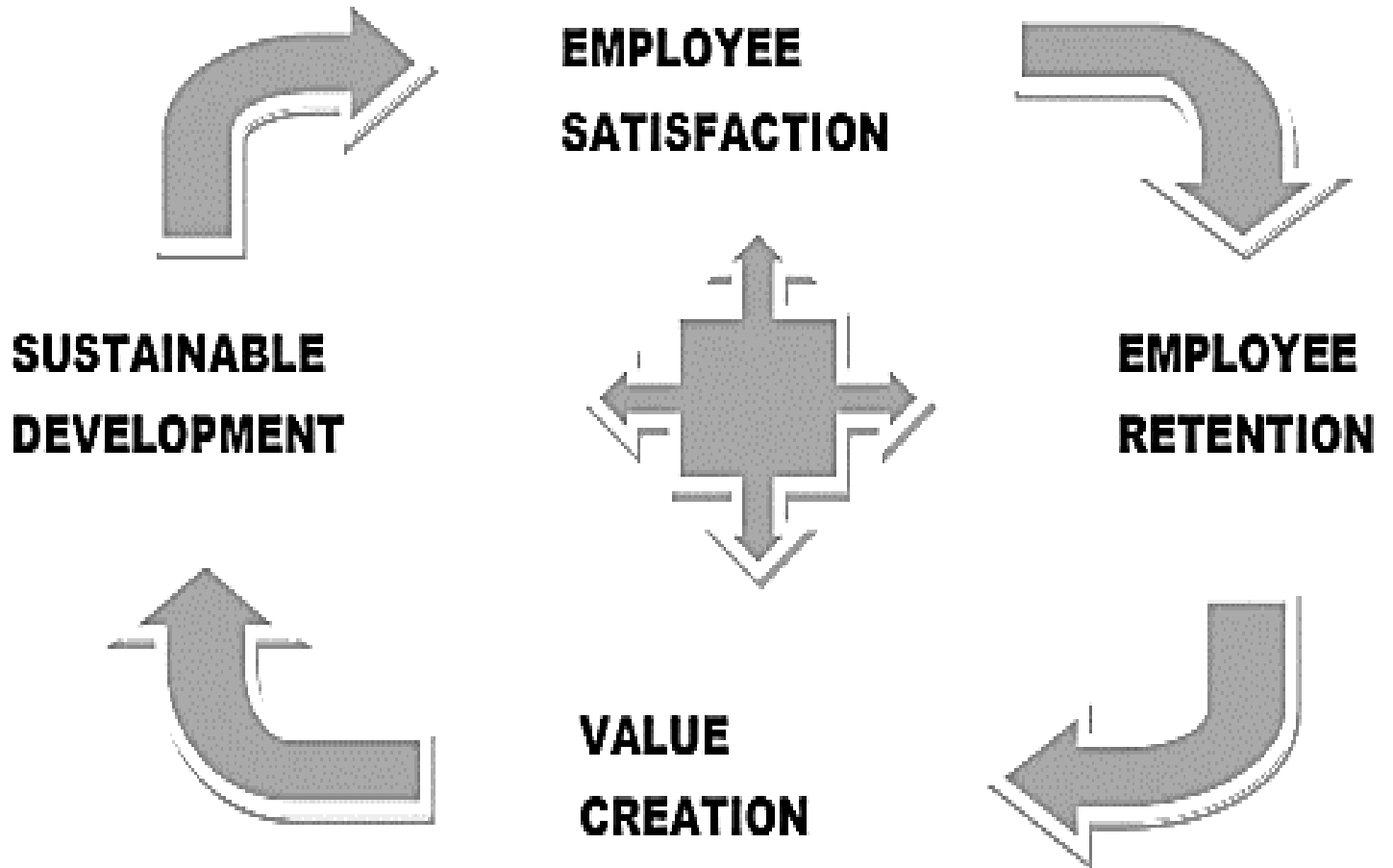
Organization carry out employee engagement activities that satisfy employee and allow organization to retain them- creating greater value.

First, **company's long-term purpose**. According to Davies (2014), sustainability changes company's long term-interest from merely maximizing profits to 'making sustainable living commonplace' that is towards betterment of society, economic and environment. This positively impacts employees, because they behave according to conducts and culture of organization. Companies influenced to maximizing profits often lead employees to behave in ways to act in most cost-effective manner- which frequently contradicts how they conduct in personal lives. Froese (2014) adds that this shows how employees have a reciprocal relationship with organizations where acting in accordance to fulfil superiors becomes highest priorities of reciprocal obligation and mutual commitment. Thus, they have less or no opportunity to voice opinions and upheld their values. However, building sustainability as core business strategy, companies transform organization cultures that not only allow employees to voice out and express their values but to work towards a higher purpose that in turn creates meaning at every task they undertake. This satisfaction benefits companies from higher retention. (Davies, 2014)

Second, **knowledge and competence**. Sustainability initiatives require specialized knowledge and expertise such as talking to suppliers regarding sustainability sourcing and evaluating new products through eco-efficiency techniques and procedures. (Davies, 2014) Thus, companies implement sustainability systems and processes to help employees integrate sustainability in business decisions. However, to implement this successfully, companies invest in educating employees about sustainability by sending them to intensive sustainability and leadership training process to develop respective skills and adopt towards new systems. This instils the 'can do' attitude amongst employees- encouraging them to apply sustainability across all aspects of business from energy, consumption to procurement. This retains employees. (Froese, 2014)

Third, **co-create sustainable practices**. Companies act and positively respond on employees initiatives. For example, employees want to adopt Global Reporting Initiatives(GRI) standards for sustainability reporting to showcase the reality of business 'going green' and that this idea receives support from board which ensures management accountants abided by GRI. This allow employees see positive impact and economic returns on social and environmental investments they helped created- inclining capability of business to retain them. All this motivates management accountants towards sustainability roles. (Froese, 2014)

Exhibit 5.0: Sustainability Development and Employee Retention- a cyclic phenomenon



Source: Goud, 2014

QUESTION 1

PART B

Discuss any FIVE (5) Perceived Barriers to their Involvement in Management Accounting practices that involve sustainable development activities.

NOTE: This question is answered in the understanding of:

What re the Barriers that affect Management Accountant's Role towards Accounting for Sustainable Development.

2.0 Perceived Barriers for Sustainable Development

The possible roles of management accountants in accounting for sustainable development, may also be influenced by the barriers and problems associated with trying to achieve sustainable development.

2.1 Drawbacks of Producing Sustainability Reports

Cost of producing sustainability reports outweigh benefits. Following GRI, sustainability reports (according to Sustainability Reporting Standards) showcase non-financial aspects of operations pertaining environmental, economic and social activities undertaken by company. This improves transparency, accountability and corporate image as report distinctly illustrates governance model, corporate values and its tactic creating sustainable global economy. However, this is not executed properly. (Swinkels, 2012)

First, **sustainability reporting strategies vary widely** as no accurate accounting principles are available to govern proper standardized reporting criteria and social disclosure. This causes different reporting styles for same information. (Swinkels, 2012)

Second, **sustainable reports may not be assured by credible sources** such as Ernst and Young (EY)- reducing reliability, relevancy, trustworthiness, accuracy and robustness of non-financial and sustainability disclosures- not accurately reflecting company's real sustainability efforts. (Swinkels, 2012)

2.2 Adoption of Sustainability Practices is too Costly

First, **sustainability is not a 'one-time' cost but 'continuous cost'** that need to allocated for fees such as licenses or patents, material costs, recurring personnel and sustainability campaign costs pertaining marketing and promotional activities.

Second, **publicity and scrutinization**. According to Bråtenius and Melin (2015), active engagement in sustainability invites journalists, reporters and media. However, if company becomes a suspect of 'insincerely being socially responsible' where promoting sustainability was just a medium to improve image and boost stakeholders confidence, or, happens to make a mistake by 'not performing ethically'; for example: mistake of harming animals and discreetly polluting river- then, this aspect of sustainability shall destroy company's image, reputation and profitability causing sustainability-risk related cost unlike companies that does not practice CSR may be free from these treats.

Third, **implementing sustainability incur extra cost from actions** such as establishing environmental protection measures, maintaining plants in economic depressed areas and promoting community development plans. (Bråtenius and Melin, 2015)

Fourth, **creating and implementing new sustainability system and processes** incur costs of purchasing, implementing, planning, customization, configuration and testing. Also, systems may need frequent updates and maintenance- incurring extra costs.

Fifth, **high labour cost** is incurred when company need to send employees for further leadership and sustainability training to ensure employees learn the necessary systems and develop expertly in order to accurately report qualification and quantification of sustainability measures. (Bråtenius and Melin, 2015)

2.3 Burden for SMEs

Sustainable practices burden for Small and Medium-Sized Enterprises (SMEs).

First, **lack of information**. SME have low 'eco-literacy' and deficiency of understanding and expertise about environmental management, best practices and sustainability legislations. This reduces the amount of information they can inherit to successfully execute sustainable development. To apply sustainability requires them to correctly interpret regulations and understand how rule influence their business- which burdens them. (Herren & Hadley, 2010)

Second, **cost**. According to Herren & Hadley (2010), supporting energy and waste efficiency measures generates high environmental costs as SME have to begin paying energy bills, find additional funding to store reusable materials and invest more time sorting waste. Also, implementing sustainability may require SME install sustainability system and processes which may be too complex and complicated adopting incredibly large software packages for their simple business processes- where high cost of ownership and maintenance cost becomes burden. (Herren & Hadley, 2010)

Third, **time**. SME have few employees (comparatively to large businesses) that manage main operations of business by working long hours. Thus, Herren & Hadley (2010) dictate, SME may not have sufficient time in incorporating sustainable practices such as waste separation, monitoring reusable or recycling materials or assigning employees practice talking to suppliers regarding sustainability sourcing and evaluating new products through eco-efficiency techniques and procedures- due to lack of staff time. This becomes a burden as implementing sustainability practices need more time from labour.

2.4 Lack of Drive from Top Level Management

Following the agency theory, managers are required to position goals of shareholders that is 'shareholder wealth maximization' as their primary objective. But, sometimes managers' aim 'personal wealth maximization'.

There is two ways to perceive how agency theory discourages management from sustainable development when both parties motive is to maximize wealth.

First, **positive agency relationship**. Based on Bråtenius and Melin (2015), following neo-classical theory of Friedman that preaches on importance of owners' wealth maximization- shows how agents (managers) must work in interests of principal (shareholders). Thus, managers shall act in accordance with shareholders' interests, since they are 'agents', and shall only maximize shareholders wealth and shall have no mandate to apply sustainability measures when it goes against shareholders maximization goals. For example: environmental activities made at expense of increased profits may reduce returns to investors without a corresponding reduction in risk- and therefore managers shall prohibit these actions.

Second, **negative agency relationship**. Managers are required to act in accordance to shareholder's interests but often oppose this responsibility due to conflict in interest. Instead, agents tend to maximize personal wealth. Based on Bråtenius and Melin (2015), this situation clearly shows that if managers are not willing to maximize shareholders wealth, obviously they shall not entertain sustainability especially when sustainability incurs additional costs and that managers are focus in creating personal gain. Self-interested managers shall seldom prefer to practice triple bottom line (social, environmental and economical) as they are more interested in short-term financial profits than uncertain long-term profitability. (Bråtenius and Melin, 2015)

2.5 Lack of Financial Incentives

This is because, sustainability contributes more towards non-financial data compared to financial. Thus, often it takes long time for sustainability attributes positively impacting corporate financial performance (CFP). This causes lack of monetary benefit offered to stakeholders to implement sustainable development. Following are factors that reduce CFP and lead to low financial incentives.

First, **scarce resource**. According to Bråtenius and Melin (2015), if sustainability practices widen with everyone encouraged to perform social responsible activities, there is high chances of unknowingly misallocating and misappropriating scarce resources. Thus, misuse of resources limited in supply may cause scarcity to fulfil the wants and needs of customers. This may result in companies suffering from opportunity cost- that if any of the decisions are taken wrongly, it can tremendously affect corporate financial performance (CFP). The decreasing CFP reduces financial incentive to implement sustainable development.

Second, **time and advertisement**. Sustainability may take long duration of time to bring in positive results on CFP and to create positive company image. Thus, to create image and earn profitable status in short term, companies may often spend on advertising to create good image in customers mind. This shows how CSR may not be a fast way to improve profitability and may increase advertising cost- negatively impacting CFP. This leads to low financial incentives. (Bratenius and Melin, 2015)

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APPENDIX

ENVIRONMENTAL MANAGEMENT ACCOUNTING SYSTEM (EMAS)

According to Flejszman (2015), EMAS delivers the concept of sustainable accounting by developing EMA framework that helps organizations recognize and access how business activities influences the environment in which it operates. This makes organization responsible in generating environmental-related information through EMAS to fulfil internal decision-making processes regarding corporate activities influencing environment and impacts of former on corporation. EMAS systematically organizes all calculations related to environmental management which not only assists firms to manage cost better, but also offers green public profile. (Flejszman, 2015)

According to Qian, Burritt and Chen (2015), EMAS deals with two types of EMA namely, 'Physical EMA (PEMA)'-which develops procedures pertaining to disposals, flows and utilization of energy and material; and "Monetary EMA (MEMA)"-that is interested in executing cost, saving and revenue quantifying procedures towards potential environmental-affecting activities. Thus, PEMA dictates how organization influences natural environment- in terms of *physical unit* measurement such as 'joules, cubic meters or kilograms'; whereas MEMA in terms of *monetary unit*- such as 'fines charged for breaching environmental law, cleaner production costs and capital project investments for environmental asset value improvement'-all of which are environmental impacts on organization's financial performance. (Qian, Burritt and Chen, 2015)

PEMA and MEMA of EMAS allow management accountant's to not only incorporate monetary but physical aspects when performing management accounting analysis- increasing scope of sustainable management accounting. This helps overcome limitation of convention management accounting that omits "separate identification, classification, measurement and reporting of environmental information, especially environmental costs". (Qian, Burritt and Chen, 2015)

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