

# **A State of Art in Managing Municipal Solid Waste Through A Cultural Perspective**

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## **Abstract**

Urbanisation and rapid development of the economy together with the enhancement of living standards has caused a dramatic increase in the generation of Municipal Solid Waste (MSW). There are Municipal Solid Waste Management (MSWM) strategies already implemented in Sri Lanka. But it is noticeable that most of those were failed due to relevant authorities are being unable to contemplate the cultural factors when implementing MSWM strategies. Thus, this paper intended to derive a culture-based solution to MSWM in Sri Lanka through a broad literature review. The paper synthesises values, attitudes and behaviours as the main cultural manifestations which describes the cultural context of MSWM. Consequently, it has been identified, among Sri Lankans, there are negative attitudes and behaviours while holding positive values. According to the literature findings, there is a hierarchical order of the aforesaid cultural manifestations, whereas behaviours are influenced by the attitudes while attitudes are influenced by values. Yet, through the attitudes and behaviours, the positive values in MSWM are not reflected, in which highlighting the urge of having a thorough study on the dynamisms in the hierarchy of value-attitude-behaviour in Sri Lankan Context. Further, this paper discusses a cycle of value-attitude-behaviour hierarchy.

## **Keywords**

Attitudes, Behaviours, Municipal Solid Waste, Values and Waste Management.

## **1. Introduction**

Past studies have emphasis, the waste generation rate of a country is proportional to its living standards of people and the population linked with urbanisation (Karak et al. 2012; Hoornweg and Thomas 2000). Further, Eurostat (2003) explains that volume of MSW has a persistent growth than the Gross Domestic Production (GDP). A study done by Zhao et al. (2011) illuminates that with the increase in the generation of MSW, the composition of MSW is also drastically changing. Consequently, this MSW generation has led to different adverse environmental impacts, public health risks, many other socio-economic problems (Ramachandra et al. 2018). Further, this majorly affects for the management system of the MSW. The main reason behind this increase in the rate of MSW is the poor management of waste and Ogawa (2000) reported, this is due to the problems like absence of proper waste collection mechanisms, open dumping and deficiencies or absence of pollution control systems in burning waste and so on. Compared to developed countries, this situation is far more critical in developing countries, including Sri Lanka. The recent tragedy in Meethotamulla is one of the best examples for the poor MSWM practices in Sri Lanka (Mallawarachchi and De Silva 2017). Furthermore, the most recent issue in Arawakkalu waste dumping site which caused the collection of garbage in Colombo halted for three days is also can be identified as a result of poor decision making of authorities in MSWM (The Sunday Times 2019; News First 2019). Factors like legal requirements, international influences, unplanned management, operational and

maintenance cost, technical and financial affordability, technology and infrastructure are hinder having adequate and successful MSWM systems (Alwis 2008; Hogland et al. 2013; Moya et al. 2017).

Scheinberg et al. (2011) emphasised that cultural and socio – economics aspects are also being enormously affects the MSWM. Although, authorities have introduced a lot of sustainable methods to properly manage the waste, the effect of the attitudes and behaviour has been ignored by such policy makers. According to De Kadt (1999), a culture should be created in the society, where consumers buy products for their durability, reusability and recyclability, while manufacturers make things, therefore, that are more readily reusable or recyclable. Thus, the platform for these mind set should be established by the authorities of a country who are engage in waste management in which profoundly depends upon their attitudes and behaviours (Jatau 2013). Mwiinga (2014) has stated that cultural values impact the awareness of people in managing waste. Awareness campaigns are very significant drivers to change the behaviour and attitudes of the people about the importance of managing waste (Mbeng et al. 2009).

As indicated by Karunaratne (2015), still, Sri Lankans are not aware about, why waste management is of great importance and the author further mention that people need attitudinal change to overcome this problem. Although there are lot of awareness programs on the importance of managing waste, yet they have not touched the minds and hearts. Milfont et al. (2010) explain that according to value-attitude-behaviour model, relationship between perceived behaviour of the environment and values and ecology is influenced by the environmental attitudes. These studies suggest the importance of focusing on cultural manifestations to bring in a proper solution for waste management, which is not addressed adequately in the extent literature. Thus, it is beneficial to identify a way of manging values, attitudes and behaviours to have manage MSWM successfully. Therefore, the aim of this paper is to provide a solution for managing MSW successfully in Sri Lanka by considering the cultural manifestations; values, attitudes and behaviours in MSWM based on the existing literature. In order to achieve the aim, initially the MSWM practices in Sri Lanka and the cultural manifestations in waste management is discussed. Then, the interrelationship between cultural values, attitudes and behaviours is reviewed. Consequently, the cultural values, attitudes and behaviours in MSWM is discussed. Ultimately a conceptual framework based on values, attitudes and behaviours for managing MSW waste in Sri Lanka is developed by means of extent literature.

## **2. Municipal Solid Waste Management Practices in Sri Lanka**

According to Vidanaarachchi et al. (2006), in Sri Lanka, the responsibility of collection and disposal of MSW generated by the community within a particular territory lays with the local authorities. Currently, only a part of MSW is collected by authorities. The rest of waste is being dumped illegally on forest areas, road sides, low lying marches, river banks and so on. Moreover, curb side and community collection are also practicing by several municipal councils (Vidanaarachchi et al. 2006).

Earlier, the common practice of MSWM was open dumping which was a least costly method. Due to free availability of land, open dumping was not a concern. According to Bandara (2008), final disposal method of highest proportion of MSW is open dumping. In dumps, apart from MSW, industrial waste, hospital and clinical waste, slaughterhouse and so on also been disposed without any segregation. Open burning of MSW is another common practice of MSW disposal causing bundle of environmental problems by the emittance of harmful gases and soot (Bandara 2008). Apart from that Sri Lanka also being practicing composting and recycling of waste up to a certain extend which is not in a satisfactory level (Menikpura et al. 2012). According to a household survey conducted by Bandara and Hettiarachchi (2010), MSW is collected from 56% of households. About 8% dumps their own waste in the pits of their backyards and nearly 20% of households dumps their waste on road sides. Apart from that the households are also practicing other MSWM practices, composting and recycling up to a certain extent.

## **3. Cultural manifestations in waste management**

Akbar et al. (2015) emphasises that there are numerous environmental issues prevailing in the world and they must be addressed at individual level. Further, those individuals required to develop their attitudes in a way that they will lead for an environmental support behaviour. Individuals always adapt, modify and sometimes ignore their attitudes according to their changing interests and needs (Akbar et al. 2015). This depicts that the change and the formation of needs are entangled. Social science researches suggest that the knowledge on a particular area might even change the attitudes (Castaneda et al. 2009). Furthermore, acceptance of an attitude rest on the way it presented, who endowed the knowledge, and the conditions for attaining the knowledge. But the way of developing or changing behaviours are depending on a set of psychological and social factors (Desa et al. 2011).

If some intensified behaviours, rewards, attitudes and opinions are repeating, they will be eventually integrating into every day behaviour and personal values (Loughlin and Barling 2001). Accordingly, proper use of rewards or some other aids may increase the probability of individual to repeat or will motivate another to adopt the same attitude (Gagne 2003).

The attitudes and behaviours embedded in people willing to obtain rewards. Local authorities need to offer infrastructure and at the same time they ought to give them the awareness on the importance and public credibility in waste management (Jatau 2013). Moreover, local authorities should also be considerate on attitudes, behaviours and knowledge too (Akbar et al. 2015). Teo and Loosemore (2001) highlighted that, depending on the organizational regulations and policies formed on waste management and their culture, attitudes regarding waste management is different. Further, there are diversified attitudes in different occupational groups in waste generation and management (Teo and Loosemore, 2001)

According to Brown (2015), behaviours and attitudes in waste management is vary according to the level of development of a country. Developed countries such as United States of America have efficient refuse disposal mechanisms (Shanks et al. 2004). Nearly, developed countries such as China exhibit pro-environment behaviours with new ways of approaching the waste management highlighting the importance of reducing the waste production and increasing recycle (Chen et al. 2011). Developing countries such as American Samoa exhibits under collection of refuse, lack of desire to dedicate scarce land towards increased landfills and has an increased number of public information campaigns regarding waste management (Shanks et al. 2004). Accordingly, De Kadt (1999) emphasises that a culture should be created in the society, where consumers buy products for their durability, reusability and recyclability, while manufacturers make things, therefore, that are more readily reusable or recyclable. Bringing in empirical evidence from Switzerland, Joos et al. (1999) indicate that waste management programs, especially waste treatment techniques, which ignore social aspects are leading to failure.

There are different studies conducted to evaluate the factors distressing these waste management behaviours, together with attitudes and practices (Akbar et al. 2015; Laor et al. 2018). Thus, as an overall, a clear differentiation of the cultural manifestations; values, attitudes and behaviours in MSWM context is hitherto to be unveiled.

#### **4. Factors affecting the cultural attitudes, behaviours and values in waste management**

According to the Barr et al (2005), there are phycological and situational factors affects for various cultural values, behaviors and attitudes, which encirclement allowing and restricting influences, and are generally classified as contextual and sociodemographic, experience based and knowledge based. Usually, findings suggest that people are willing to partake in MSWM programs predominantly the recycling. The findings of the literature emphasis that recycling partaking tending to be higher in older people and more affluent people. But lower among less affluent and younger people in developed countries, thus, it is obvious that age is affecting these cultural manifestations. Corraliza and Berenguer (2000) have contended that, institutional limitations and resource constraints are also some other factors affects for the negative behaviours and attitudes in waste management. Moreover, according to Meneses and Palacio (2005) and Plummer (2002), level of income, service delivery by relevant authorities are also some factors that causing different values, attitudes and behaviours in MSWM. Further, Martin et al. (2006) explains that, acculturation, and race/ethnicity could also be identified as other sociodemographic factors. Under knowledge based and experience-based factors, education level, awareness programs and experience in waste management could be identified.

#### **5. The interrelationship between Values, Attitudes and Behaviours**

The study of the relations between values, attitudes, and behaviours are among the most examined topics in social psychology. Thus, the below section will explain the interrelationship among cultural values, attitudes and behaviours.

**Values** - The prevailing value highlighted in a society is considered as the most overriding feature in a culture, out of different cultural indications for instance artefact, norms, attitudes, behaviours and so on. (Hofstede 1980; Schwartz 2006). These values focus shared understanding of what is necessary and virtuous in cultural standards. Cultural values justify and emphasis collective and specific beliefs, actions and aims. The fundamental principles of cultural values in societies are stated in policies, institutional arrangements, everyday practices and norms. As an example, in extremely competitive economic systems, educational performs and incompatible legal arrangements, a cultural value of accomplishment and determination can be reflected that drive children to prosper (Schwartz 2011). Further, Schwartz (2011) states that peoples' values begin from psychological and biological requirements associated to social modifications and survival. Consequently, at the level of society, cultural values

which originate from the functional necessities that societies experience in order to survive (Morales et al. 2018). The comparative steadiness can be considered as another important characteristic of cultural value positioning (Schwartz et al. 2000; Hofstede 2001). Nevertheless, in contrast, Samarasinghe (2012) has specified that amplified wealth, social adaptation to epidemics, developments in technology, connections with other cultures, and other peripheral factors are affecting the fluctuations in cultural values. According to Rabinowicz and Rønnow-Rasmussen (2004), pro-attitudes impact in generating cultural values. Furthermore, the need to conduct research distinctly for developed and developing countries, considering the context specific nature of values are highlighted by researchers (Diekmann and Franzen 1999).

**Attitudes** - Attitude is defined as a theoretical structure that implies whether a person likes or dislikes whatsoever. The judgment of "attitude objects" (people, places, tasks, events, skills, and so on) is attitude. Attitude progresses over time and shoots from the internal framework of values and beliefs (Jung 1971). Even though individuals that possess the skills and knowledge to complete the task might be there, only a positive attitude regarding the specific task will inspire, the intention to partake and finish the task (Kumar 2018).

**Behaviours** – Human behaviours is a response of an individual or group of individuals for an internal or external stimulus referring to an array of physical actions and observable emotions (Regan and Fazio 1977). These are being dictated by age, thoughts and feelings revealing attitudes and behaviours (Altman 1975). In social behaviours in which a subset of human behaviours, social interactions and culture being studied which is influenced by the social environment, ethics, authority and so on (Jordan 2000).

### 5.1 Hierarchy of Values, attitudes and behaviours

The study done by Homer and Kahle (1988) tried to put together the interrelationships between values, attitudes and behaviours, by proposing a casual model conserving the influence among them. The model of Homer and Kahle (1988) have tried to assimilate the study of the interrelationships between by proposing a causal model on the influence between them. Homer and Kahle's model assume a cognitive hierarchical influence of values, attitudes and behaviours. According to this model values impact and influence the behaviours indirectly and directly through attitudes. Therefore, the value-attitude-behaviour model suggests a hierarchy of cognitions by which an influence is flowing theoretically from values (more abstract cognitions) to attitudes (mid-range cognitions) to some specific behaviours.

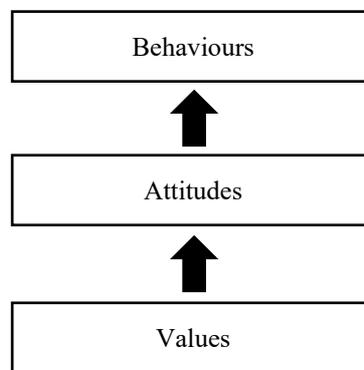


Figure 1: Value, Attitude and Behaviour hierarchy

Source: Homer and Kahle (1988)

On the other hand, the main characteristic of the Homer and Kahle (1988) model is to focus the role of attitudes behaviours and values. Subsequently, a visual representation of model can be depicted as a causal arrangement: value → attitude → behaviour as shown in Figure 1. Even though the value-attitude-behavioural hierarchy model has been used by varies amounts (Shim et al. 1999), such as in relation to the professional attitudes (Shim et al. 1999), the model is also being mainly deploy for studies regarding environmental issues. Thus, it is worth looking in to the cultural values, attitudes and behaviours in MSWM.

The below sub sections synthesise a pair wise comparison of cultural values, attitudes and behaviours based on the hierarchy of value, attitude and behaviour.

**Values vs. Attitudes** - Conventionally, values or primitive beliefs are considered as an essential feature of self-concept, and a type of "fundamental truths" in reality (Rokeach 1968). Even though some researchers have identified the importance of understanding the relationships that prevail between more abstract and more precise

appraisals, many have not yet theoretically distinguished values and attitudes (Nordlund 2009). Knowles (1975) pinpoints that always values and attitudes co-operate with the family, peers, and the society and people seems to automatically 'like' those, who is sharing their core values. Whether it is personal, educational or professional managing the value system is the reason for the triumph of any sort of relationship. The researcher pinpoints that to achieve excellence and competence, people not only require to be capable to teach and assess skills and knowledge, but also requires to teach and assess attitudes. Besides, in order to accomplish excellence, people should be able to identify fundamental values that support attitudes. This specifies that values influence attitudes in a cultural framework.

**Behaviours vs. Values** – According to iceberg theory of culture developed by Edward T. Hall in 1976, if the culture of a society is considered as an iceberg only some parts are noticeable above the surface of the water, but a larger part is unnoticed below the surface. Hall (1976) further states that the exterior part of culture is what visible, which is the tip of the iceberg, which comprises behaviour. The inner part of culture is resting below the surface of society, which contains beliefs and the values and methods of thinking that establish behaviour (Akbari, 2015). Schein (2004) specifies that values are verified through behaviour of people. Accordingly, there is a chance of values affecting the behaviour of people.

**Attitudes vs. Behaviours** - Solomon et al. (2006) specify that an attitude is built on the observed behaviour. Attitudes of individuals concerning observed behaviour also has an impact on judgment as behaviour can also be false. One may show formal behaviour and misleading obedience, when they want a positive judgment or if they sense their performance are being observed. Even though it may specify an attitude, the observer should have the ability to clarify the change between false behaviour of the true attitude and its disguised attitude (Kumar 2018). Hence, a person, who is continually discussing and accepting all the things his or her supervisor declares may not essentially agree, but may very well attempt to receive favour. According to Herzberg (2008), individuals want a positive attitude so as to be motivated and engage in the task. This indicates the forward relation of attitudes influencing the behaviour.

Herzberg (2008) further declares that attitude accelerates from the core values and beliefs, which people embrace within. Consequently, it can be quantified that beliefs are assumptions and beliefs that we rely on are true, created upon past experiences. Values can be initiated on concepts, things and people's valuable thoughts. Behaviour is the face of these internalisation classifications (attitudes, beliefs, and values) (Kumar 2018).

## 6. Cultural Values, Attitudes and Behaviours in Municipal Solid Waste Management

According to Milfront and Schultz (2016), studies which have been done on cross cultural context includes that the environmental protection is accepted in both developing and developed countries. There are cross cultural differences do exist on the environmental friendly behaviour on the impact on environmental orientation when considerate of specific environmental issues (Milfont et al. 2006). There are different structural conditions linked with waste management, such as recycling systems while culture related factors affect the peoples' contribution to partake in waste minimisation and recycling which are ought to believe as environmental friendly behaviours (Kaplan, et al. 2019). In addition, the stimulus of personal motivations and partialities, such as values on environmental friendly behaviour and environmental orientation is different in cultural aspects. Therefore, there should be more efforts in developing research models considering these cultural factors including, cultural values, attitudes and behaviours in MSWM to achieve its success. Table 1 depicts the cultural values, attitudes and behaviours extracted from MSW and from general literature.

Table 1: Values, Attitudes and Behaviours Related to MSWM in Sri Lanka

Values related to MSWM	Attitudes related to MSWM	Behaviours related to MSWM
<u>Positive values</u> <ul style="list-style-type: none"> <li>Ensure establishing integrated, environmentally favourable and economically feasible waste management practices within the country</li> </ul>	<u>Positive Attitudes</u> <ul style="list-style-type: none"> <li>Fear of damaging the environment</li> <li>Fear of occurrence of natural disasters</li> <li>Recycling is good</li> </ul> <u>Negative Attitudes</u>	<u>Positive Behaviours</u> <ul style="list-style-type: none"> <li>Land filling</li> <li>Separating waste as food, paper and polythene</li> </ul> <u>Negative Behaviours</u> <ul style="list-style-type: none"> <li>Open dumping</li> <li>Open burning</li> </ul>

<ul style="list-style-type: none"> <li>• Maximise resource recovery by minimising the amount of waste disposing</li> <li>• Minimise adverse environmental impacts</li> <li>• Accepting the workability of alternatives in waste management and disposal mechanisms</li> <li>• Reusing of discarded materials to the maximum before the final disposal</li> <li>• Community awareness</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Local authorities are not managing MSW solid waste properly</i></li> <li>• <i>There is lack of reliability in authorities in waste management in waste, controlling mechanisms and decision making for setting of waste facilities and their operations</i></li> <li>• <i>“Not in my backyard”</i></li> <li>• <i>‘We dump – They collect’</i></li> </ul>	<ul style="list-style-type: none"> <li>• <i>Avoid segregating the waste</i></li> <li>• <i>Unplanned industrialisation</i></li> <li>• <i>Unplanned and uncontrolled urbanisation</i></li> <li>• <i>High waste generation</i></li> <li>• <i>Inefficiencies in existing waste management practices and systems</i></li> <li>• <i>Hesitate to adapt advanced technologies</i></li> <li>• <i>Burning away or dumping recyclable materials without taking to a recycling facility</i></li> </ul>
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Source: Eheliyagoda (2016), Gunaruwan and Gunasekara (2016), Karunarathne (2015), Wijetunga (2014), Vidanaarachchi et al. (2006)

As depicts in Table 1, it is noticeable that Sri Lankans hold positive values in MSWM but, most of the attitudes and behaviours are negative (negative cultural manifestations are shown in *italics* in Table 1). These ideals are not comprehensive, yet, provide a general indication to the cultural manifestations of Sri Lankans in MSWM. Nonetheless, according to the hierarchy of values-attitudes-behaviour, values influence to the attitudes and attitudes are influence to the behaviours. Even though there are many positive values held within Sri Lankans, those values are not such mirrored in attitudes and behaviours as of the hierarchy of values-attitudes-behaviour. Thus, there is a requirement of conducting a proper pragmatic study by digging further in to values, attitudes and behaviours of Sri Lankans in MSWM in order to interpret the dynamisms attached with the hierarchy of value-attitude-behaviour.

## 7. Conceptual framework for managing Municipal Solid Waste in Sri Lanka in a cultural perspective

Through the previous sections, the interrelationship among the cultural values, attitudes and behaviours were discussed in relation to MSW solid waste in Sri Lankan context. The empirical findings through the literature revealed a way for the management of MSW through a cultural perspective as shown in Figure 1. According to the framework values associated with MSWM impact the attitudes and those attitudes related to MSWM impact behaviours in MSWM. On the other way around, behaviours are depending upon the attitudes and attitudes are depends upon the values. This is the hierarchical relationship among values, attitudes and behaviours as discussed in the Section 4 of this paper. This the primary linkage identified which is in dotted lines in the Framework as the per the existing literature. Yet, as per the literature, it is difficult to change the values embedded in a person. Thus, the values, attitudes and behaviours should be managed in a reversible cycle compared to the hierarchy of values, attitude and behaviours, as shown in thick black arrows in Figure 2. This cyclic interrelationship of the values, attitudes and behaviours were identified through the discussion at Section 5 as in below;

- Management of Attitudes through Behaviours - Behaviours of people impacts (influence) in the creation of positive attitudes in MSWM
- Management of Values through Attitudes – Attitudes impact (influence) in creating cultural values
- Management of Behaviours through Values - Socially accepted values in MSWM are impact (influence) in changing negative behaviours in to positive behaviours.

Thus, strategies like awareness programs should be suggested in order to have positive behaviours and attitudes within people in waste management.

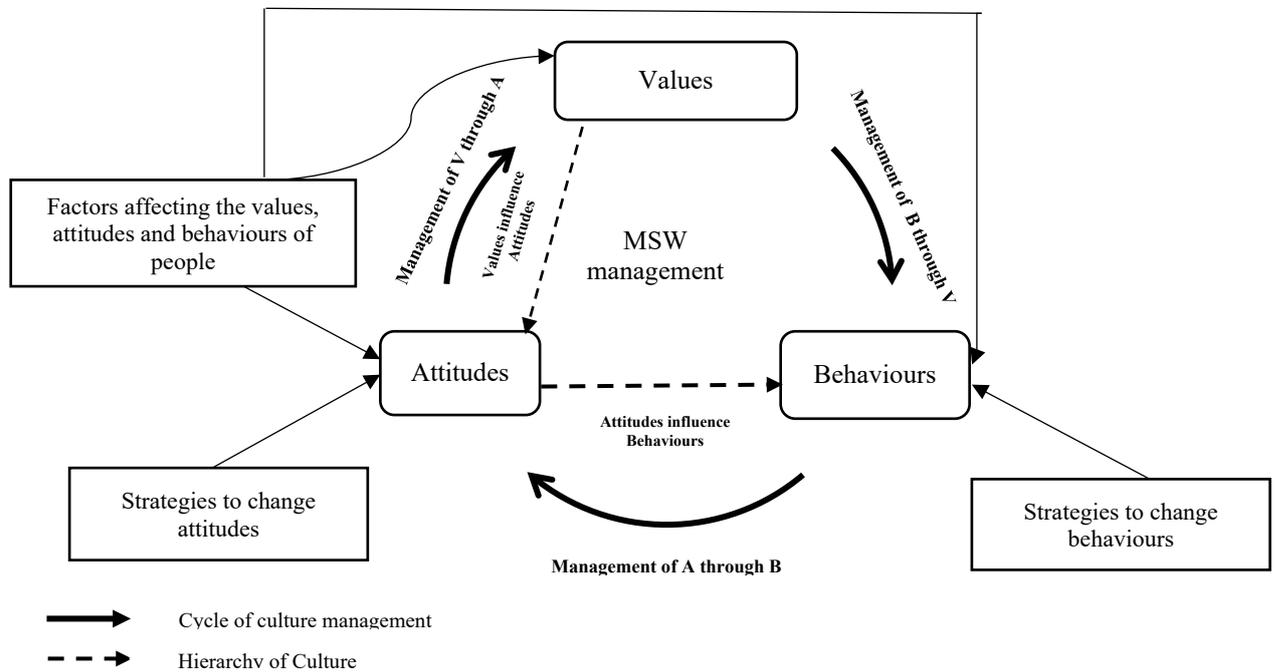


Figure 2: Conceptual Framework for Managing MSW in Sri Lanka in a cultural perspective

Conferring to the conceptual framework, it contends that, there is possibility in changing the behaviours of people through public awareness campaigns, trainings, influences from an external party and so on, the negative behaviours of people in MSW management will be changed in to positive behaviours and thus, consequently their attitudes will be altered in to a positive manner. Having positive or good attitudes will autonomously and eventually change the values embedded in a person. Since, this is a cycle these positive values may result in having positive or good behaviours. This can be done by changing the negative attitudes of people as same as above.

Hence, to manage MSW successfully in Sri Lanka, the cultural values, attitudes and behaviours should not be overlooked. Moreover, by focusing on the cycle of culture management, such culture-based management of MSW could be done.

## 8. Conclusions and way forward

In Sri Lanka, there is a waste crisis due to the improper management and handling waste by the relevant authorities and the lack of community participation in MSWM. Thus, this paper intended to provide a culture-based solution to MSWM in Sri Lanka by reviewing the MSWM practices in Sri Lanka, cultural manifestations in waste management and with an effort to identify the interrelationship between cultural values, attitudes and behaviours in MSWM.

The effect on values, attitudes and behaviours for the success of MSWM practices is not an exception. Furthermore, an effective and positive changes in those cultural manifestations are important to gain the maximum benefits from the MSWM practices. As per the empirical findings, although Sri Lankans are holding positive values towards MSWM, most of their attitudes and behaviours are negative. Thus, a dynamism in the hierarchy of values, attitudes and behaviours could be identified in Sri Lankan context. A conceptual framework is derived (refer Section 7) by identifying a reverse cycle of managing the cultural values, attitudes and behaviours. Identification of stratagems to make use of this cycle of culture management in MSWM could be identified as the further research areas of this paper.

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