

Service Quality of Pest Control in Baguio City, Philippines

DONNY CALICDAN CALAUNAN, PhD
Baguio City, Philippines

Abstract- *In response to the widespread pest infestation, a thriving industry has emerged, leveraging pest control for income and stability. Technological advances have revolutionized the field, introducing more efficient pest extermination methods. With the proliferation of Pest Control Services, intensified competition underscores a focus on customer satisfaction. This study evaluates service quality in Baguio City, examining compliance with client requirements, overall service quality, and the relationship between compliance and perceived quality. Using a descriptive correlational design, the researcher employed a survey questionnaire for 140 clients. Findings reveal high compliance (mean average of 3.71) and perceived very high service quality (mean score of 3.91). A significant moderate relationship (correlation coefficient of 0.372) links compliance and perceived quality. Common challenges faced by providers include delayed reports, billing issues, scheduling conflicts, document requirements, and concerns about protective gear. Conclusions highlight the industry's commitment to meeting client needs, emphasizing providers' capability for high-quality service. The study suggests that compliance may not solely influence perceptions, urging continuous service improvement. Recommendations include designing functional protective gear, formulating timely responsiveness policies, enhancing compliance at higher service quality, and institutionalizing personnel training for sustained quality service delivery.*

Indexed Terms- *SERVQUAL (Service Quality), IPM (Integrated Pest Control Management), ISM (Integrated Sanitation Management), PCO (Pest Control Operators)*

I. INTRODUCTION

When pest infestation became rampant in households, businesses, and the like, business-minded individuals took advantage of it as a source of income and stable profession. Through the years, the early techniques of pest control have been challenged by the rapid evolution of technology resulting in new ways of pest extermination and control. The coupling of new technology with the old and tested ways of pest control has made the process faster and beneficial with less manual intensive labor. But in exchange, profit and income are lessened.

Insects are the most abundant living organisms in the animal kingdom, comprising about 75% of all animals combined. They inhabit every nook and cranny of this planet because they can adapt to their environment quite easily possessing a wide array of physical, physiological and behavioral characteristics. (A.C. Sumalde and C.B. Adalla, et al, 1996 p. 47)

Insects are small organisms whose sizes normally range from less than 1mm to a few inches only. They belong to the Class Insecta or Hexapoda of the Phylum Arthropoda. They are invertebrates and do not possess backbones. Instead, they have a segmented body like the millipedes (Class Diploda), centipedes (Chilopoda), scabs, crayfish (Crustacea), insects (Insecta/Hexada), tick, mites, spiders (Araachmica) and others. The specific study of insects is called Entomology. (A.C. Sumalde and C.B. Adalla, Certified Pesticides Applicator's Manual, et al, 1996 p. 47)

Many insects are carriers of pathogens. Some arthropods have recently been attention not because of their venomous nature but because of the allergic reactions they cause to man and animals. These arthropods serve as intermediate hosts of helminth parasites. Many kinds of insects annoy man and

animals by their bites or stings. For this reason, many control measures have been developed as these are necessary in minimizing if not completely eliminating the hazards brought by these pests. (B.L. Cariaso 1996, p. 88)

In addition to their direct impact on man's health, insects also play a role in other aspects of mankind's activities. For example, they affect agricultural food production by chewing the leaves of crop plants, sucking out plant juices, boring within the roots, stems or leaves, and spreading plant pathogens. They feed on natural fibers, destroy wooden building materials, ruin stored grain, and accelerate the process of decay. (Meyer, 2007)

When insects overrun an area without the people's knowledge the problem of infestation arises. There are several factors that support infestation. One factor is the presence of trees and shrubs that are in contact with a house or building. The branches of the tree provide access for these insects or rodents into the building. Shrubbery close to the walls can also hold moisture exacerbating the rot process and inviting a variety of pests. Walls in direct contact with the ground soil also allow carpenter ants, moisture ants and occasionally termites into the house.

Crawl spaces, access door or vent screens allow rodent's access to crawl space under the house where they damage insulation and wiring with their feces, urine and constant chewing. The activities of these rodents often go unnoticed until eventually they find a way into living space. The Soffit vent screens in the attic also allow birds, bats, and rats to enter a building's attic. Gutters clogged with debris also attract pests. Standing water in gutters is also excellent mosquito breeding habitat. Damaged downspouts may prevent water from draining away from the house and instead collect under the house creating moisture/decay problems which invites pests.

Firewood or other items stored against the house create harborage areas for a myriad of insects. Carpenter ants will readily move into the wall that the firewood is stacked against. (Hodson,2014). Pest control service providers do not only look for the possible causes of infestation. They also consider the signs of infestation. Staff (2014) suggests the

following signs of pest and insect infestation. These signs include the presence of dead bugs in window ledges and basements. The presence of many bugs of the same species indicate that they probably live in the property.

Another indicator is the presence of pest droppings. This is classic evidence that a pest infestation may be present. Since rats and mice will make nests out of whatever they have available to them, shredded paper may be considered evidence of infestation. Additionally, holes, gnaw marks, chewed up electrical wires may indicate the presence of these pests. There are certain recognizable smells that pests give off. Experts claim that bed bugs have a sweet, musty odor. Mice tend to give off a musty, urine smell, and rats smell like ammonia. Roaches have been said to have an "oily" odor comparable to "fecal soy sauce".

Other signs of infestation are the pattering of rodents' feet, scratching on the walls, gnawing, squeaking, or scurrying.

Termites are extremely destructive pests that may cause serious structural damage to a building. The common indicators for termite infestation are visible holes or sagging floors, and wood that sounds hollow when tapped, shed wings of termites, or fecal pellets that are tan and resemble sawdust. The presence of damaged plants may be indicators of pest activity. Gnawed grass blades or plant parts, as well as patterns of lawn damage, such as uneven grass length or large circular brown areas, may be a sign of a pest infestation.

Another indicator are ant hills found along fences and pavement cracks.

When infestation has become serious and beyond control by common household remedies, Pest Control Services are needed. Providers are also known as the Pest Control Operator. (Certified Pesticides Applicator's Manual,1989). Since the "beginning of time", pest control for commercial property owners has been vital to the health and longevity of businesses. Records of natural pest control date back to 2500 BC, thousands of years after the beginning of agriculture. Today's pest control companies employ improved natural techniques to bring you integrated

pest management (IPM), the most advanced and earth-friendly form of pest control available. (Price, 1973) Pest control refers to the regulation or management of a species defined as a pest, usually because it is perceived to be detrimental to a person's health, the ecology or the economy.

Pest control is at least as old as agriculture, as there has always been a need to keep crops free from pests. In order to maximize food production, it has been advantageous to protect crops from competing species of plants, as well as herbivores competing with humans. (Meyer, 2007). Chemical pesticides date back 4,500 years, when the Sumerians used sulfur compounds as insecticides. It was only with the industrialization and mechanization of agriculture in the 18th and 19th century, and the introduction of the pesticide's pyrethrum and derris that chemical pest control became widespread. In the 20th century, several synthetic insecticides, such as DDT, and herbicides were added to the strategies for pest control. Chemical pest control is still the predominant type of pest control today, although its long-term detrimental effects on the environment have led to a renewed interest in traditional and biological pest control. (Omaha Pest

Control Articles, 2016) as well as newer methods of pest control. One such method is the use of vacuum cleaners which help remove dead insects, dead mites, allergens, rodent hairs, rodent droppings and other pest-related contaminants (Neeme and Beech, 2015). Removal of such contaminants removes potential allergens from premises, which may be important in terms of triggering allergic asthma.

In the Philippines, Pest Control started in 1959 with the setting up of the Manila Pest Control (MAPECON) by Mr. Gunzalo "Jun" O. Catan. His firm was practically the sole player in the industry and he was the only one connected to Department of Health (DOH). Since then, several Pest Control Providers have become players in the pest control industry. Almost all of the Pest Control Providers in the Philippines were former employees of MAPECON Philippines.

At present, there are seven (7) active Pest Control Companies in Baguio City. These are as follows:

Baguio Pest Exterminator (BAPEX), DEVCON, JC Pest Control, Manila Pest Control (MAPECON), Pest Science, Q Master, and Hope Pest Control Services (HOPESCON). The Pest Control Providers offer basic services that include a General Pest Abatement Control System which targets target flying and crawling insects using different Pesticides, spraying, misting and baiting. These programs have been adopted and proven to be effective if properly done and implemented. Rat and mice control uses the latest Fertilizer and Pesticide Authority (FPA) approved anti-coagulant preparation as bait. The treatment is augmented with the use of sticky trap or glue boards in food preparation areas, storage rooms and offices.

Spraying with residual and non-residual chemicals and a Misting/Fogging machine is used against cockroaches, mosquitoes, flies, and other crawling insects. Spraying and syringe injection are used to control beetle or "Bukbok". The Termite Abatement Control System provides clients with effective ways of controlling and destroying the breeding grounds of termites within the premises. Termiticides, drenching, soil poisoning, powdering and baiting, are used to control the presence of termites within the area. A brief explanation of these techniques is found in the following discussions.

Wood Drenching refers to the direct spraying of termiticides on woods. Drilling with the use of a jack hammer is done so that the chemicals can penetrate the infested area. Mound demolition involves destroying the nesting place of the termite colony. Dusting wooden parts attacked by subterranean termites aims to contaminate the termite colony. Soil poisoning prevents subterranean termites from damaging nearby wood. Ground areas surrounding the house / building is cordoned off, drenched or injected with termiticide. The termite proofing work system is a program offered to customers prior to the construction of a house or building. Pest Control providers also offer a consultation program. The service providers provide technical advice regarding Pest control Management and Sanitation. This is usually done to clients with in house Pest Control System and to clients who want to know more about Intergrated Pest Control Management. (hopepestcontrolservices, n.d.)

The pest control industry in Baguio City is characterized by high competition. Each service provider must take into consideration the technologies and methods that are being used in the market in order to cope up with competition. In order to maintain and develop loyal customers, service providers must be sensitive to market trends in order to satisfy the needs of the clients. Different customers have different needs and preferences. Some customers are satisfied with the traditional methods of chemical application while other customers want to use more modern processes such as baiting systems which are more expensive but do away with the foul smell of chemicals. Hence, there is a need to understand what the customers want and how satisfied they are with the quality of services offered by pest control providers.

The findings of this study would thus be of help to the service provider for policy making. The findings will serve as pattern for more accurate, intelligent, valid and relevant information which are necessary in decision making. The findings may be used by the service providers to identify what areas of their services can be improved to bring about better client satisfaction and thus expand their client base as well. The clients of the Pest Control Service providers can also use this study to widen their understanding of pest control management. The pest control association can consider the findings of study in advancing the systems and technologies used the service providers. To the community, the findings of the study will be of great help as a source of information regarding pest control. Lastly, to the researcher, the conduct of this study can widen his understanding of the stakeholders of the industry that he himself is a member of.

II. THEORETICAL AND CONCEPTUAL FRAMEWORK

The following discussions provided the framework for the conduct of the study.

- Total quality Management (TQM) and Service Quality (SERVQUAL) Model

Total Quality Management or TQM is a management approach as well as a management philosophy that focuses on continuous process improvement within organizations to provide superior customer value and meet customer needs. (Ramasamy, 2009). The primary

concern of TQM is to satisfy customers and survive in the market (Neyestani, 2017). This definition thus puts emphasis on the central focus of TQM which is customer focus. The definition drives home the central idea that the customer is one of the most important factors for the success of the business. Without customers, business cannot survive. It is the obligation of business owners then to find out what customers need in order to achieve post-purchase customer satisfaction (Syed, 2008). Hunter (2012) cites the father of TQM, Edward Demming who proposes the idea that the consumer is the most important part of the production line. Quality should be aimed at the needs of the customer, present and future. Every decision that the organization makes should be directed towards improving processes in order to assure that the needs of the customer are met. Hunter further uses the phrase, the voice of the customer, as a means of emphasizing customer focus. He writes that listening to, and appreciating the voice of the customer is critical to understanding how to improve to satisfy the customers' needs.

Reynolds (2013) identifies other principles of TQM. Aside from being customer-centric, TQM practitioners emphasize ensuring employee involvement and empowerment. The word total in TQM implies that every stakeholder, employee, and customer is to be involved in the TQM process. Deming talks about team work and removing fear from the organization as well as ensuring that employees find pride in what they are doing. (Sharma, 2010)

Continuous improvement is another pillar of TQM. Management must continuously find ways of improving the processes to achieve quality services and products for the customers. The Japanese call this principal kaizen. (Reynolds, 2013) The principle involves building quality into the process and into people. The kaizen practice involves identifying wasteful practices in an organization. These wastes include overproduction wastes, inventory wastes, waste from waiting, motion waste, transportation waste, rework, and overprocessing waste.

Overproduction wastes occur when material, products, or treatment are created or produced more than is necessary. Inventory wastes result from acquiring

resources that are not used immediately or at all leading to the destruction of the resource. Motion waste refers to unnecessary movement within a process while transportation waste is the unnecessary movement between processes. Processing beyond the standard constitute overprocessing wastes. (Ramasamy, 2009) All of this waste can occur in the delivery of pest control services.

SERVQUAL, later called RATER, is a quality management framework first published in 1977 by Valarie Zeithaml, A. Parasuraman & Leonard Berry to measure quality in the service sector. The model allows customer service experiences to be explored and assessed quantitatively and has been used widely by service delivery organizations. Nyeck, Morales, Ladhari, and Pons (2002) write that the SERVQUAL measuring tool “appears to remain the most complete attempt to conceptualize and measure service quality” (p. 101). The SERVQUAL Model compares service quality performance with customer service quality needs. The model takes into account the perceptions of customers of the relative importance of service attributes. The service attributes are Reliability, Assurance, Tangibles, Empathy, and Responsiveness.

Reliability is the ability to perform the promised service dependably and accurately. Assurance refers to the knowledge and courtesy of employees and their ability to convey trust and confidence. The factor of tangibility considers the appearance of physical facilities, equipment, personnel and communication materials. Empathy is present when there is caring, individualized attention provided to customers. Finally, responsiveness is the willingness to help customers and to provide prompt service. (Yarimoglu,2013)

- Integrated Pest Management (IPM)

IPM brings into a workable combination the best strategies and control methods that apply to a given pest infestation problem. IPM has been defined in various ways but a more scientific definition describes it as, "the practical manipulation of pest populations using sound ecological principles to keep pest populations below a level causing economic injury". The emphasis here is "practical" and "ecological". There are many ways of controlling insect pests but only a few are practical, and fewer are ecologically

sound, such that an undesirable citation is created. (Bauer, 1985)

While integrated pest control is often used interchangeably with IPM, in the strictest sense, these terms are not identical. Originally, integrated control simply meant modifying chemical control in such a way as to protect the beneficial insects and mites, or integrating chemical and biological control methods. Subsequently the concept was broadened to include all suitable methods that could be used in complementary ways to reduce pest populations and keep them at levels which did not cause economic damage. This essentially is IPM. It includes a variety of options, any one of which may not significantly reduce the Pest population, but the sum total of which will give adequate reduction to prevent economic losses. A modern definition of IPM may be the use of all available tactics in the design of a program to manage, but not eradicate pest population so that economic damage and harmful environmental side effects are minimized. (Flint and Van Den,1981)

IPM is not a static, unyielding system. It is dynamic, ever-changing, as we develop a better understanding of all factors that affect the system. These factors include climate, alternate host plants, beneficial insects and man's activities. In a narrow sense, IPM means the management of the few important pests generally found on crops, but consciously or not it must include all insect pests, not only the "key" ones but also the secondary pests, which seldom do any harm. If this were not so, one might suddenly find some of these minor insect pests or even non-pests elevated to the status of serious insect pests because of the failure to consider them in the total scheme. (Glass, 1975)

IPM as a concept is not new, but one that is receiving new emphasis as man looks for better methods to grow and store food for an expanding population, and at the same time preserve his environment. The rationale for using IPM is threefold. First, it can cut production costs mainly by reducing energy inputs. Secondly, IPM can reduce environmental contamination through the judicious use or reduced use of pesticides. And finally, an IPM program allows for maximum utilization of cultural practices and natural enemies (for plant pests) and physical methods (for storage

pests). IPM can be designed to take advantage of the ecological principles governing pest population abundance. This requires a thorough understanding of the role of all the factors responsible for a pest population reaching certain levels at a particular time of the year, or duration of storage. (Metcalf and Luchkman . 1975).

There are three basic elements of IPM: natural control, sampling economic levels, and insect biology and ecology. The first element of IPM relates to the fullest utilization of naturally occurring suppressive factors, including any practice by man which will make the total ecosystem less favorable for growth of the insect pest population. Obviously, this requires a thorough understanding of the ecosystem.

The second element is that of using sound economic threshold (ETL) levels as the basis for applying control measures, especially chemical measures. Establishing and using dynamic ETL's provide a basis for delaying the use of insecticides. This permits the maximum utilization of other control methods, such as the use of beneficial insects.

The use of economic threshold levels implies adequate sampling of all harmful and beneficial insects in the agro-ecosystem and particularly in any one crop at a given time. The levels found through sampling must then be measured against the economic level established for the crop, the beneficial insects, and the probable population trend of the pest species. The sampler thus becomes a key person in an IPM system. The third element, insect biology and ecology, is essential to the fullest utilization of the other three elements. Little concerning natural control can be understood without detailed knowledge of the biology and ecology of all the species present. This knowledge is also essential in establishing the role of each species in the system and in determining the amount of damage inflicted by each pest species. Adequate sampling is directly dependent a thorough familiarity of the species involved.

Knowledge of the biology of a certain problem pest will serve as a basis for planning the control strategies and provide operational guidelines for these strategies. In this context, it is important to know the relationship between the pest and the crop (crop life tables) and the

mortality factors (pest life tables), both biotic and abiotic (parasites, predators, temperature, relative humidity) which play a major role in the determination of pest population dynamics.

An understanding of the sequential dominance of pests in relation to growth stages could provide the immediate impetus for developing a simple integrated control program based on minimum pesticide application (Rejesus, 1976). By delineating the succession of major pests at different stages of plant growth (or storage time for stored products), the frequency, timing and dosage of insecticide application could be synchronized, hence avoiding pesticide use on a time-wise basis, or the "calender" method. The control program could then be based on expected pest population at any given growth stage of storage duration.

(Flint and Van Den, 1981)

Five general types of single component control methods may be used in IPM programs in stored ecosystems. These are: chemical control, physical and mechanical methods, biological control, host plant resistance and regulatory control. Chemical control involves the use of insecticides and acaricides when necessary and at rates compatible with other strategies.

Physical and mechanical methods are direct or indirect (non-chemical) measures that completely eliminate pests, or make the environment unsuitable for their entry, dispersal, survival and reproduction. Physical-mechanical control measures may include environmental manipulation (temperature, relative humidity, control atmosphere), mechanical barriers, light traps, irradiation, thermal disinfestation, sanitation, etc. Many times, mechanical and physical methods require considerable extra equipment, materials and labor, hence, they may only be economical in certain situations. For field pests, these methods are rather inefficient but in a storage ecosystem, many of the physical techniques are effective and have great potential for use in an IPM system.

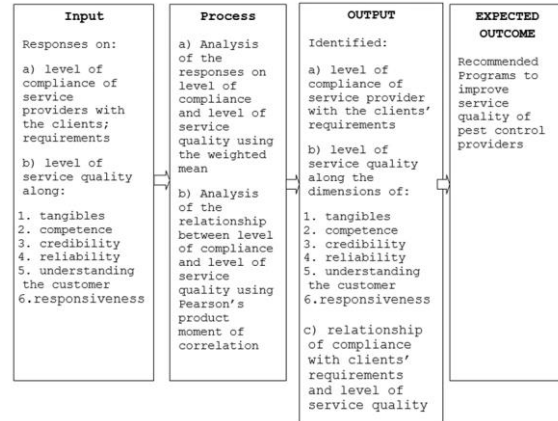
Biological control may be defined in a narrow sense as "the manipulation of predators or pathogens to manage the density of an insect population". In a broader sense, it includes "the manipulation of other biological facets

of the pest life system, such as its reproductive processes (i.e., sterile male technique), its behavior (pheromones), the quality of its food and so forth."

The manipulation of the genetic make-up of the host so that it becomes resistant to pest attack is called host plant resistance. Over the years there have been numerous successes in breeding for resistance to a variety of pests and currently many crops are being selected for this purpose.

Fundamental regulatory control principles involve preventing the entry and establishment of foreign plants and animal pests in a country or-area, and eradicating, containing or suppressing pests already established in limited areas. Under the auspices of various quarantine acts, numerous control measures are implemented in an attempt to exclude potential pests, to prevent spread and to supplement eradication programs. Ports of entry are the first line of defense against the introduction of new pests. Pests which break through the port of entry are eradicated or contained within limited areas. Quarantine action is used only against insects of economic importance, although it is sometimes necessary to contain insects which are of no economic importance in another country until their behavior in a new environment can be studied. (Flint and Van Den, 1981)

Figure 1 shows the framework of the study. The input-process-output –outcome framework was used. The inputs consisted of the responses of the clients and service providers on the level of compliance by the service provider with the requirements of the customers and the perceived level of service quality along the dimensions of the SERVQUAL model. Requirements in this context included the specific services that the customers asked for. The responses were analyzed using quantitative means specifically descriptive as well as inferential statistics. The analysis allowed the researcher to identify the level of service quality, the level of compliance and the relationship between the two major variables. As an outcome of the study, a program to enhance the level of service quality was formulated by the researcher.



Statement of the Problem

The study aimed to determine the service quality of pest control in Baguio City. Specifically, it sought to answer the following:

1. What is the extent of compliance of pest control providers with the requirements of the clients?
2. What is the level of service quality rendered by pest control providers?
3. What is the relationship between the extent of compliance with the requirements of the management and the perceived service quality of pest control providers?

Hypothesis.

1. There is a significant relationship between the extent of compliance with the requirements of the management and the perceived service quality of pest control providers
2. What problems are encountered by pest control providers?

III. METHODOLOGY

• Research Design

The researcher used the descriptive survey in the conduct of the study. The design was deemed the most appropriate since a descriptive study looks at the prevailing conditions of the population of the study. In this case, the intent was to describe the prevailing levels of service quality of the pest control providers of Baguio City. The study is a descriptive survey because the primary data gathering tool was the questionnaire administered to a sample of respondents from the population.

• Population and Locale of the Study

The study was conducted in Baguio City. The respondents included the different pest control providers and pest control clients. They were selected using purposive sampling after the total sample size was determined using Slovin’s formula. Out of a total population of 217, the researcher determined a sample size of 140. He then used stratified sampling to determine the actual number of respondents by category.

• Data Collection Tool

The researcher used a questionnaire as the primary data gathering tool. The questionnaire consisted of -- parts. The first part consisted of twenty items adopted from the SERVQUAL model of PARASURAMAN. The items covered the five dimensions of service quality and were answerable by selecting from 4 choices: very high, high, low, very low. (www.diva-portal.org/smash/get/diva2:327600/fulltext)

Part 2 of the questionnaire aimed to solicit the level of compliance of the service provided with the customer’s requirements. There were 10 general services with some items having sub-areas. The respondents were instructed to check the level of compliance by selecting from the following choices: very much complied, much complied, complied, and not complied.

The researcher conducted interviews to support and validate the responses gathered from the survey. The interview was conducted on the authorized representatives of each respondent. These authorized representatives are the managers and supervisors that represent each respondent. These were represented by 2 service providers, 55 hotels, 18 schools, 63 restaurants and 2 food chains.

• Data Gathering Procedure

Two sets (2) set of questionnaires were used in gathering information from the respondents. First set was used to determine the extent of compliance of pest control providers with the requirements of the clients. The questionnaires were personally distributed to the respected authorized representative of each respondent. Some of the questionnaires were answered

and retrieved onsite while some were retrieved after how many days or weeks depending on the availability of the of the authorized representative of each respondent. At the same time, to minimized time constraint, upon retrieving the questionnaires, personal interview was being conducted with the help of the authorized representative of each respondent.

The second questionnaire was administered to the same respondents with the help of the authorized representative who were directly involved in the operation in determining the level of service quality rendered by pest control providers. The questionnaires were also personally administered by the researcher to the respondents. Some of the questionnaires were also answered and retrieved onsite and some were retrieved after how many days or weeks depending also on the availability of the authorized representative of each respondent. Personal interview was also been conducted to support the researcher’s study with the help of the authorized representative of each respondent.

• Treatment of Data

The researcher used the weighted mean to analyze the responses relevant to specific problems 1 and 2. The weighted mean was interpreted as shown.

Level of compliance	
Statistical Limits	Description
3.25 - 4.00	Fully Complied (FC)
2.5 - 3.24	Much Complied (MC)
1.75 - 2.49	Less Complied (LC)
1.0 - 1.74	Not complied (NC)

Level of service quality	
Statistical Limit	Description
3.25 - 4.00	Very High (VH)
2.50 - 3.24	Much High (MH)
1.75 - 2.49	Less High (LH)
1.0 - 1.74	Not High (NH)

IV. RESULTS AND DISCUSSIONS

This chapter presents and interprets the data gathered from the survey questionnaires. The first set of data presents the extent of compliance of the pest control providers with the requirements of the client. The second set of data shows the level of service quality rendered by pest control providers. The last section of the chapter discusses the relationship between the compliance with the requirements of the client and perceived service quality of pest control providers.

- Compliance of the Pest Control providers with the Requirements of the Clients.

Table 3 presents the responses regarding the compliance of the pest control providers with the requirement of the clients.

As shown in Table 3, all seven requirements of the clients were fully complied with by the service provider. The over-all average weighted mean is 3.71, interpreted as “fully complied”.

The service requirements complied with are ranked as follows: Dilution Rate and Chemical registration both were rated the highest with an average of 3.92; second is the spraying, baiting and monitoring with an average of 3.67; and ranked the lowest are service reports and personal protective gear with an average of 3.58.

Table 3: Extent of Compliance of the pest control providers as to the Client Requirements

Service requirements	Food Chains	Restaurants	Schools	Hotels	Average Weighted Mean	Description
1. Chemical Dilution Rate	4.00	4.00	4.00	3.67	3.92	Fully complied
2. Chemical Registration	4.00	4.00	4.00	3.67	3.92	Fully complied
3. Spraying	3.00	4.00	4.00	2.67	3.67	Fully complied
4. Baiting	3.33	3.67	4.00	3.67	3.67	Fully complied
5. Monitoring	3.00	4.00	4.00	3.67	3.67	Fully complied
6. Service Reports	3.33	3.33	4.00	3.67	3.583	Fully complied
7. Personal Protective Gear	3.33	3.33	4.00	3.67	3.58	Fully complied
Over-all Average Weighted Mean					3.714	Fully complied

The respondents observed that both Chemical Dilution Rate and Chemical registration are the number one requirement fully complied. The perception could be attributed to the fact that the service providers strictly follow the standard rate of the Integrated Pest Control Management (IPM). Pest control providers are mandated to register the chemicals to the Department of Agriculture and Bureau of Food and Drugs Authority (BFAD) as one of the requirements in getting their permits to operate. The finding implies that the pest control providers were compliant as to the requirements of the clients in Baguio City.

The compliance of the pest control providers was based on the requirements of the clients. The interviews were used as one of the bases in satisfying the requirements of the clients. Different food chains here in Baguio City, for example, required the service providers to use chemicals that were not harmful to people or that would contaminate the food and pose health hazards. Restaurant and food chain clients had experienced that some unlicensed service providers were using unregistered chemicals. This practice prompted the clients to require the service operators to

provide the license of every chemical that would be used.

These guidelines also prompted the operators to be more serious and careful about the chemicals used. Each chemical must be duly approved by the Fertilizer and Pesticides Authority of the Department of Agriculture. This clearance protects both the service provider and client. The Integrated Pest Management (IPM) is also used as one of the guidelines by the service providers and the clients in improving the compliance of the service provider to the clients. Just what was said by one of the managers of Mc Donalds here in Baguio City. *“Dapat ang mga kemikal niyo na gagamitin sa store naming ay may MSDS. This interview result prompted the pest control operators to be more serious in using chemicals.*

- Level of service quality rendered by pest control providers.
So that pest control providers can achieve customer loyalty, they need not only to comply with the

requirements of their customers, but they also need to provide service quality.

Table 4 shows the perceived level of service quality along the different SERVQUAL dimensions.

The clients perceived that understanding the customer, reliability, competence, credibility, tangibility, service provider and responsiveness are of very high level. Understanding the Customer ranked first as indicated by the weighted mean score of 4.00. All of the respondents were unanimous in saying that the service providers provided a very high level of service quality in understanding their customers. This means that the service providers are able to provide services that will best address the needs of the client. They know their clients and understand fully the extent and seriousness of the client’s problems. They are likewise able to adjust according to the schedule of the client and also adjusts costs if necessary, according to the budgetary constraints of the clients.

Table 4: Level of service quality rendered by the pest control providers.

Determinants of Service Quality	Food Chains	Restaur ant	Schools	Hotels	Average over-all weighted mean
A. Understanding the customer	4.00	4.00	4.00	4.00	4.00 Very high
B Reliability	3.89	4.00	4.00	3.89	3.94 Very high
C. Competence	3.67	4.00	4.00	4.00	3.92 Very high
D. Credibility	3.56	4.00	4.00	4.00	3.89 Very high
E. Tangibles	3.89	3.67	3.89	3.89	3.83 Very high
F. Responsiveness	4.00	3.11	3.89	3.89	3.72 Very high
Average over-all mean	3.86	3.81	3.92	3.91	3.87 Very high

The clients also perceive that the reliability of the service providers is very high as shown by the overall

mean score of 3.94. This implies that the service providers can be depended on to do the correct process

without needing rework. They come on schedule as promised and provide the exact services agreed on. This was based on the proof that there was always a renewal of contract once the service that was being provided by the provider was reliable. Also, one of the bases was there were always constant and continuous dialogue with the clients to have mutual understanding regarding the services that the clients need and what is being provided to them by the service provider.

Service providers have a very high level of quality in competently doing their work. The employees of the service providers do the work surely and capably, using the materials and equipment skilfully and efficiently. The materials used are also up to date and well maintained. The respondents perceive that all the service providers have good reputations. This is perhaps explained by the perception of competence and reliability that the service providers consistently show. Hence, the service providers have very high service quality in terms of their credibility. To satisfy the reputation of the service providers, a continuous seminars were being attended quarterly that was being provided by the National Association to equip the service providers on the latest equipment and systems in Pest Control.

Tangibility includes the physical factors that can be readily seen or observed by people. The respondents of the study also perceive that the physical dimension has very high quality. The physical facilities, tools and equipment used look clean, functional, and well-maintained. The personnel doing the work use clean and appropriate clothing.

While, it was ranked last among all other dimension, the service quality if responsiveness is nevertheless still very high as indicated by the weighted mean of 3.72 (see Table 4). Responsiveness refers to the readiness and willingness of the pest control providers to help customers by providing prompt and timely services. The service providers may not be able to respond quickly enough for the satisfaction of the customers because of other commitments to other clients. The process of exterminating or controlling pests takes time depending on the severity of the problem. In such instances, the service provider cannot immediately respond to or accommodate the clients right away.

The over-all mean score of 3.91 implies that the clients of the pest control service providers in Baguio City have generally been very satisfied with the consistent provision of quality services.

The pest control providers here in Baguio City were also satisfied with the clients since different clients were willing to provide information regarding pest control.

It was the experience of some of the restaurant owner here in Baguio City. The restaurant owner needs a high service quality coming from the pest control service providers. Pest control service providers must have the proper documents and the highest level of technical knowledge and these were satisfied by the service providers.

The requirements and dimensions of the SERVQUAL -reliability, assurance, tangibles, empathy, and responsiveness have been complied with by the pest control service providers. "As it was said by the restaurant owner through interview, "*Kaliangan lagi din ang seminar ninyo para alam ninyo ang latest sa pest control*".

Reliability is the ability to perform the promised service dependably and accurately. Assurance refers to the knowledge and courtesy of employees and their ability to convey trust and confidence. The factor of tangibility considers the appearance of physical facilities, equipment, personnel and communication materials. Empathy is present when there is caring, individualized attention provided to customers. Finally, responsiveness is the willingness to help customers and to provide prompt service. (Yarimoglu,2013)

Relationship between the extent of compliance with the requirements of the clients and the perceived service quality of pest control providers.

Table 5 shows that there is a significant moderate relationship between the extent of compliance and the perceived level of service quality. This is reflected by the correlation coefficient of 0.372.

Table 5: Correlation between extent of compliance and level of service quality

		P1SCR	P3SCR
P1SCR	Pearson Correlation	1	.372**
	Sig. (2-tailed)		.000
	N	139	139
P3SCR	Pearson Correlation	.372**	1
	Sig. (2-tailed)	.000	
	N	139	139

** . Correlation is significant at the 0.01 level (2-tailed).

This means that when more of the client’s requirements are complied with, the clients perceive a higher level of service quality (see Table 4). However, the moderate correlation implies that it is not enough to just meet the requirements of the client (see Table 3). There are other factors that also have to be considered in getting the clients to perceive that service quality is high. Simply complying with the requirements of the customer is not enough. The way by which the services are delivered to meet the requirements of the customer have to be taken into account as well.

All clients need to experience very satisfying services in order for the service providers to maintain a continuous relationship with customers. The service quality required by the clients should also satisfy the compliance of the service provider on the requirements of the clients as to documentation. (Metcalf and Luchkman,1975).

Most of the clients interviewed agreed that the service provider must provide all the necessary requirements of the clients in order to provide a very satisfactory level of compliance.

This is very basic basis of the service provider as well as the clients regarding the services requirements. (Mapecon.com)

- Problems encountered by Pest Control Providers. The following discussions focus on the problems encountered by pest control service providers in Baguio City. Common problems experienced are the delayed reports from central offices. Many of the pest control service providers are branch offices and their central offices are located in Manila. Whenever the Baguio offices request for information or feedback necessary for their operations in Baguio, they often

experience a time lag and hence their operations are also affected. Hence, they cannot immediately implement decisions that could further improve their operations and enhance satisfaction of their clients. The reason behind these was decision is always based on what the higher ups will say and the approval was always based on the head office.

Another problem concerns delayed collection and billing. One outcome of delayed feedback on reports is also a delay in the issuance of billing statements to the clients. Thus, the Baguio branches cannot immediately collect payments which in turn have an impact on their operations and inability to meet quotas set by central office. The head office always requires feedbacks before approving the payments to the service providers. Once communication was delayed, payment and collection is being affected. This prompted the service provider a request that there should be a localized decision regarding pest control on the part the clients I order minimized payment and collection delay

Conflicts of scheduled appointments also occur. As mentioned in a preceding discussion, sometimes, the process of controlling the pests take longer than expected which results in moving back the schedules already set with the client. The delay in the feedback on reports made to the central office also affects the schedules for follow up visits to the clients. This delay sometimes results in dissatisfaction which may in turn result in a loss of customers. Clients always adjust the schedule of pest control because of some reason that the branch was not ready and communication to the employees was not properly disseminated.

Fourth, some customers are very meticulous about document requirements. They require many documents that sometimes hinder the provider from acquiring the contract. Clients always ask the service provider the latest documents such as chemical MSDS (Material Safety Data Sheet), Chemical Registrations, Business permits and others without prior notice because of the guidelines coming from the head offices of the clients.

These instances prompted the service provider a leeway from the clients in order for the service provider an ample time in providing the necessary

documents. One other common problem concerns the use of personal protective gear. This is actually a requirement for pest control service providers. However, many staff finds the protective gear uncomfortable to use as it interferes with their breathing. It is thus not uncommon to see many personnel not using the required gear. This can be hazardous to the health of the personnel doing the work. Because of the heat created by the gear, some of the personnel choose not to use some of the gear. This is also being approved by the client as well as the service provider. The service providers must always have the continuous improvement of services in the form of acquiring advance technologies and continuous trainings and seminars for the providers to be more and properly equipped when it comes to pest control services.

CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the conclusions and recommendations on the Service Quality of Pest Control in Baguio City.

- **Conclusions**

Based on the findings and results of this study, the following conclusions are derived:

1. Pest control providers are sensitive to and endeavour to meet the requirements of clients all the time.
2. Pest control service providers have the capability and competence to provide quality services and thus ensure high levels of customer satisfaction and loyalty.
3. Compliance with the customer requirements may not be the only factor that influences the perception of service quality.
4. Continuous improvement of services is still needed to sustain delivery of quality services.

- **Recommendations**

Based on the conclusions, the following recommended actions are offered:

1. The management of pest control services must design protective gear that are functional and comfortable to use.
2. Policies on timelines regarding feedback or action on reports, requests, and information from head

office may be formulated to enhance responsiveness to client needs.

3. Compliance with client requirements must be delivered at higher levels of service quality.
4. Service providers must include and institutionalize continuous training for their personnel.

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