## CONTENTS

# SERVICE QUALITY IN PUBLIC SERVICE: A CASE OF GHANA NATIONAL SERVICE SCHEME

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## ABSTRACT

*This study was carried out to ascertain whether personnel serving their mandatory year of service in Ghana were satisfied with the quality of service provided by the Ghana National Service Scheme. The satisfaction of service personnel was measured by employing the gap model and factors influencing the personnel's satisfaction were also determined by factor analysis based on principal component extraction using Oblimin with Kaiser Normalization rotation method. The results indicated that service personnel were satisfied with the empathy, assurance and responsiveness aspects of service delivery. Alternatively, service personnel were not satisfied with the tangibility and reliability dimensions which had a negative gap score. Some of the key factors which significantly contributed to service personnel's satisfaction included the willingness of National Service Scheme staff to answer personnel questions and the ability of staff to quickly respond to the needs of personnel. Developing training policy for staff of the scheme was recommended as one of the measures to deal with these important aspects of quality service delivery. This study is among the foremost attempts to use the SERVQUAL model to examine the service quality of public service organizations in Ghana.*

**JEL:** M0, M1, M3

**KEYWORDS:** Service Quality, SERVQUAL, Quality Dimensions, Kaiser Normalization, National Service Personnel, Gap Model, Ghana

## INTRODUCTION

T his research sought to determine whether National Service Personnel were satisfied with the quality of service rendered by the National Service Scheme in Ghana. The service quality gap model which was developed by Parasuraman et al., (1985) was used. The model postulates that service quality is a function of both perception and expectations. The gap score was computed for each item and the overall score for each dimension was calculated. The score for each dimension represented the level of satisfaction of a service personnel associated with the dimension.

Ghana's National Service Scheme requires every student who graduates from an accredited tertiary institution to offer one year mandatory service to the country. The national service structures and policies are formulated and implemented by the National Service Secretariat on behalf of the Government of Ghana. In general, the National Service Scheme is perceived as delivering low quality service to the National Service Personnel. There is the perception that some public officers have a "take it or leave it; we careless" attitude. Their customers exhibited high levels of frustration and anger, which led to the establishment of the Public Sector Reforms Ministry to help re-orient these institutions to be more customer-centric in their activities by setting service quality delivery targets. The managers of public institutions signed the "NEW CHARTER"(Boahene, 2008), which was an agreement whose main objective was to ensure monitoring of performance to set targets. The specific objectives of the research

were to; find out whether National Service Personnel are satisfied with the service rendered by the scheme and to determine the factors that influence National Service Personnel satisfaction. Decades ago, people were not concerned about the services of organizations within the service sector in Ghana. Currently, according to the Ghana Statistical Service (2013), the service sector contributes 50.6% to the Gross Domestic Product (GDP) of the Ghanaian economy. So, in the face of increased competition coupled with rising expectations from customers who are more aware of what they need and what is available in terms of service alternatives pragmatic efforts are required to improve service quality.

The service sector of Ghana's economy is experiencing several changes which require using the concept of service quality. According to Bharadwaj, Varadarajan, and Fahy (1993) and Shank and Govindarajan (1994) as companies which render services look for ways of getting competitive advantage, service quality is a valid choice to obtain a competitive positional advantage. Both an intrinsic culture and an extrinsic reputation are often developed by organizations with a service quality orientation. These skills are more sustainable as compared to those that are simply subject to replacement or imitation (Barney, 1991).This section is followed by a review of related literature on service quality and public institutions. The data and the methodology used in the study are presented under section three (3). Presentation of results, discussions and conclusions follows respectively.

## LITERATURE REVIEW

Service Quality

Service quality has attained considerable attention and arguments in research literature due to the complexity in defining it as it is a multidimensional concept (Jamal & Naser, 2002). Everyone has a different meaning to it (Bennington & Cummane, 1998). Because service is conceptual (Sureshchandar, Rajendran & Anantharaman, 2002), it is not easy for service providers to give explanation and for customers to appraise (Edvardsson et al, 1994). Diverse definitions of service quality are accepted under different circumstances since there is no global definition of quality but for some time now quality has been the focus (Reeves & Bednar, 1994). Bennington and Cummane (1998),defined quality differently as excellence, conformance to requirement (Crosby, 1979), value (Abbott, 1955), fitness for use (Juran, 1974), conformance to specification (Gilmore, 1974), meeting and going beyond customers' expectations (Gronroos, 1985 as cited in Parasuraman et al,. 1988) and loss avoidance (Ross, 1989).

According to Zeithaml (1987),while the quality of products are tangible and can be evaluated by dispassionate indicators such as durability, features and performance, service quality is intangible and it is defined in terms of perception, attitude and subjectivity. Service quality is a focused assessment of the customer's perception of particular dimensions of service: tangibles, assurance, reliability, empathy, responsiveness. Price, quality of product, service quality, situational factors and personal factors are perceptions that influence satisfaction (Zeithaml & Bitner 2003). Customer satisfaction can offer numerous benefits such as forming a recommendation by word of mouth which can be of great importance to the organization, providing an excellent reason for buying and developing of customer loyalty and the relationship between company and customers becomes harmonious (Tjiptono, 1997).

As a result, it is necessary to consider quality issues in the sector so as to further increase productivity within the sector. Quality has turned out to be a very significant factor for successful companies because it is believed that the competitiveness and long term profitability of both service and manufacturing organizations are determined by quality. Allowing firms to more and more distance themselves from competition, Wiley (1991) stated that quality has also been included as a way by which organizations may improve upon their differentiation strategies. For instance, quality and customer service skills were identified by Bharadwaj, Varadarajan, and Fahy (1993) as possible sources of competitive gain. They maintain in their contingency model that, to sustain competitive advantage, service quality delivering can

help sustain an organization's competitive position just as in cost synergies, organizational expertise, and brand equity do.

According to Owanko, (1999) several researchers defined quality to mean value for money, fitness for a purpose, and actions leading to expected standard or to the achievement of set goals. Gronroos (1984) considered service quality from two distinct perspectives. These are technical and functional service qualities. The technical quality of service quality refers to the basis of technical accuracy and procedures. It is explained, in this situation, on the basis of the technical accuracy of operational procedures. Functional service quality on the other hand looks at quality from customer point of view since they may lack the technical expertise to assess the service quality of the organization. Parasuraman, Zeithaml, and Berry (1988) also explained that they rely on "how" service is delivered and qualities such as responsiveness, reliability, empathy (which is related with the service encounter) happen to be important since it may not be easy for the customer to measure the technical quality. In discussing service quality, it is believed that there is a direct relationship between service quality and satisfaction. Consumers will always feel satisfied with a superior quality service. According to Parasuraman et al (1988), a service quality arises when expectations are met or exceeded and a service gap occurs when expectations fall below perception or expectations are not met. Whenever customer's expectations are met or exceeded, they become satisfied and consider the service to be of high quality.

Service Quality Dimensions

Companies desire to get loyal customers in order to ensure continuous purchases of product or services and in turn increasing their maximum revenue. The five service quality dimensions; The tangible dimension takes into account the appearance of the physical surrounding (including personnel, physical environment and facilities, communication materials and equipment). The evidence of care and attention of a service provider is depicted by the condition of the physical surrounding (Fitzsimmons & Fitzsimmons, 2001). The other aspect of the tangible dimension of service quality is about creating first hand impressions. It is the desire of every company that all its customers get a unique positive impression so that they would never forget first-hand impression which would possibly make them come back in the future. Organizations use the tangibles to express their image and signal quality (Zeithaml et al., 2006).

This dimension is how the firm cares and offers individualized attention to its consumers to make them feel exceptionally appreciated and special (Chase et al, 2001). The features of empathy include; effort to understand the consumer's needs sensitivity and approachability (Fitzsimmons & Fitzsimmons, 2001). When customers like the National Service Personnel feel they get quality and individualized attention, it is more likely that they will go back to the organization and do business again there. One example is the ability of the staff of the scheme to make a service person who has misplaced their identity card or posting letter his/her own trouble and find ways of resolving it.

Reliability is a service quality dimension which refers to how a company consistently performs the service accurately and dependably. Customers expect reliable service performance and this is seen when the service is completed on time without any errors in a similar way every time. Service reliability according to Berry *et al.* (1990) is the service "core" to the majority of consumers and so managers ought to make sure they use every chance they get to present an attitude of "do-it-right-first". Reliability issues are supposed to be incorporated in companies' mission statements. Companies must teach the staff the significance of reliability during training programs, set reliability standards, appoint reliability committee to study particular services and to find ways to enhance reliability, evaluate error rates and compensation error-free service. Delivering service by showing how reliability and consistency are portrayed can take two paths. First, service is produced by stressing the dependability of the process and technological superiority – a high tech approach. Although technological drivers like the web technology, digital, satellite and advances in telecommunications increase the tradability of services (Braga, 1995) and

expedite the globalization (Lovelock, 1999), gaps still exist in the level of technological growth between developing and developed countries. For example, timely receipt of their national service allowance each month is important to the service personnel.

This dimension symbolizes the alacrity of the firm to assist their customers by providing them with a fast, good and quality service. Customers kept waiting for no reason generates negative perception of service quality which is not necessary. If failure occurs during service delivery, the ability of the firm to recover rapidly with professionalism can generate a perception of quality which is very positive (Fitzsimmons & Fitzsimmons, 2001). Many service firms are concerned about how long their queues are since the waiting time of customers will have a negative influence on customer's perception of service. Both partners value time; the customer and the firm. In others words, when waiting time is very lengthy, service firms may lose transactions; and on the other, customers regard waiting time as a sacrifice to receive the service. This is one of the reasons why several service customer-oriented firms position themselves to offer a time advantage to customers. They recognize the essential role of time (Lovelock and Gummesson, 2004). Waiting time has four features namely: objective (The length of time a customer will have to wait before he/she is served is referred to as Objective waiting time (Davis and Vollman, 1990; Taylor, 1994). This is normally measured by customers with a stop watch); subjective (The subjective waiting time is the consumers' guesstimate of time waited.

 Researchers suggest that this aspect is calculated by way of the perceived waiting time, Hui and Tse, 1996; Pruyn and Smidts, 1998). Obviously, the estimated time depends on objectively calculated elapsed time, Hornick, 1984; Antonides et al., 2002); affective (The affective aspect entails emotional responses to waiting including as happiness, irritation, pleasure, frustration, boredom, stress, etc (Taylor, 1994; Hui and Tse, 1996; Pruyn and Smidts, 1998); and cognitive (The cognitive aspect of the waiting time is the customers' evaluation of the wait whether it being reasonable, acceptable and tolerable (Durrande-Moreau, 1999) and also considering the wait to be short as opposed to long (Pruyn and Smidts, 1998). The affective and cognitive feature forms the appraisal of the wait (Pruyn and Smidts, 1998).Delaying customers has negative influence on the whole service assessment (Taylor, 1994; Katz, Larson, & Larson, 1991; Hui and Tse, 1996); and more specifically, how satisfied they are with the service (Pruyn and Smidts, 1998). In addition, customers' wrath and their assessment of how punctual the service is have an effect on the whole service performance (Taylor, 1994). Likewise, Hui and Tse (1996) discovered that service assessment is affected by the affective response to the wait. Furthermore, Pruyn and Smidts (1998) show that both the affective and cognitive dimensions' appraisal of wait affect the service satisfaction positively. Another element of responsiveness is customer complaint handling and customers switch service providers more possibly because their problems are not resolved satisfactorily (Hart et al., 1990).

If a Service Personnel member complains, the response of the Secretariat can change the state of the Service person from dissatisfaction to satisfaction. Anecdotal evidence recommends that when the service provider resolves the problem by accepting responsibility the customers become "bonded" to the company (Hart *et al.*, 1990). When a Service person complains, they offer the Secretariat the opportunity to resolve the problem and interestingly, if the Secretariat recovers successfully, it brings about loyalty and profits to the company (Fornell and Wernerfelt, 1987). Hence, handling customer's complaint is capable of having influence on customer retention and satisfaction.

The courtesy and knowledge of the staff of an organization and the ability to convey confidence and trust is known as assurance. The assurance dimension consist of competence to carry out the service, communicating effectively with the customers, politeness and respect for the customers, and the character of the service provider who has the customer's best interests at heart(Fitzsimmons & Fitzsimmons, 2001).In relationship marketing assurance is used to describe a business relationship which determines the level to which each party feels they can rely on the truthfulness of the promise offered by the other

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party(Callaghan et al., 1995). This definition is broadly accepted as the basis for relationships (Sullivan and Peterson, 1982; Crosby et al., 1990; Andaleeb, 1992; Houston et al., 1992; Moorman et al., 1992). According to Moorman et al.*,* (1992)and Martin & Sohi (1993), it has been considered as a very important component of business relationships.

Gronroos (1990), documented this in a form of an exchange relationship and Morgan and Hunt, (1994) identified it as a key construct in modeling relationship marketing. The components of these three dimensions, that is, reciprocity, empathy and bonding have been to trust and this leads to cooperation (Anderson and Narus, 1990; Morgan and Hunt, 1994), bargaining (Schurr and Ozanne, 1985) and communication (Bialaszewski and Giallourakis, 1985; Anderson and Narus, 1990; Mohr and Nevin, 1990). In general, it appears that, if there is high level of trust between the supplier and customer, there is a greater possibility of continued relationship or long-term existence (Martin and Sohi, 1993). Relationships can only exist between persons or networks of individuals since it requires strong element of interpersonal obligation rather than between organized corporate groups (Eisenstadt and Roniger, 1984). The concept of trust can be proposed as not coming from system trust but rather primarily from personal trust. Trust in this context refers to personal trust which is the foundation of person-to-person and supplier-customer relationships. Trust has been conceptualized by Morgan and Hunt (1994) to exist when one party/person has confidence in the integrity and reliability of the other partner. In truth, trust could be seen at the firm level (Moorman et al., 1993) or at the level of individuals (Rotter, 1967). Additionally, trust could also be considered as "trust in the service itself" when it is conceptualized as a service quality dimension (Parasuraman, Zeithaml and Berry, 1985, 1988).

Measuring Service Quality using SERVQUAL Model

It has been suggested by Lewis (1987) that what can be measured is the thoughts/perceptions.  Thus, the level of satisfaction can be determined by finding the difference between perceptions and expectations. The idea is comparable to the service quality model propounded by Parasuraman et al (1985).  They identified five (5) gaps issues as a potential influences on a customer's evaluation of service quality. These are; Gap 1 refers to the gap between National Service Personnel (customer) expectations and National Service Secretariat's (management) perceptions of those expectations; Gap 2 refers to the gap between National Service Secretariat's perception of what the National Service Personnel wants and specifications of service quality; the difference between service delivered and service quality specifications is denoted by Gap 3; Gap 4 refers to the gap between service delivery by the National Service Secretariat and what the Secretariat promises to the National Service Personnel (customer) through external communication; the gap between National Service Personnel  (customers') service expectations and their perceptions of service performance denotes Gap 5.A study by Zeithaml and Bitner (2003) suggests that, to achieve service quality, management, employers and customers' expectations and perceptions gaps must be well managed. In this case Gap 5 is the most relevant depicting customers' perception of actual service performed and the customers' expectation of the service. Thus the National Service Secretariat must lessen the customer gap in order to achieve quality service. However, the Secretariat cannot achieve this without the contribution of the other four (4) gaps because they all, directly or indirectly, may hinder the delivery of quality service.  This calls for pragmatic efforts to ensure that the expectations of National Service Personnel of service performance are met. Following this gap model was the design of the SERVQUAL instrument by Parasuraman et al. (1985) to examine and measure the gaps between customers' perceptions and expectations of service quality.  They further defined five (5) quality dimensions namely; tangibles, empathy, reliability, responsiveness, assurance (all defined above). Mathematically, the instrument proposes the following equation; Q=P – E.  Thus, the perception score minus expectation score of National Service Persons indicates the service quality level.

Service Quality in the Public Sector

Definition of service quality in the public sector has a wider scope than the private sector (Wisniewski, 2001). This is because public sector institutions are answerable and liable to deliver quality service to the citizens and communities in a country as well as customers and other users of the service users. Researchers on service quality in the public sector include Black, Briggs and Keogh, (2001), Wisniewski and Donnelly, (1996), Brysland and Curry, (2001), Donnelly, Kerr, Rimmer and Shiu, (2006), Williams, Staughton and Saunders, (1999). Evidence from literature suggests a strong support for the use of the SERVQUAL model to measure service quality in the public sector (Brysland and Curry,2001).Service provision in the public sector is very complex (Gowan et al., 2001). Apart from meeting the expressed needs of customers, employees will have to allocate resources, find unexpressed needs, set priorities and publicly justify and account for what has been done.

Overview of National Service Scheme

Ghana, like most African countries, recognized immediately after the attainment of political independence in 1957, the urgent need for youth mobilization. The indispensable role of the youth in the present and future circumstance of the nation has been the overriding consideration and motivating force behind all attempts at youth mobilization in the country. On 7th September, 1973, the National Redemption Council Decree 208 was passed. This Decree brought to being the Ghana National Service Scheme. This perspective of the National Service Scheme was initiated by an Act of Parliament. The Act 426 of 1980was enforced in 1982 by the Provisional National Defense Council. The Decree was in response to the ever increasing need for vacancies in government ministries, educational institutions and urban oriented commercial and industrial concerns to be filled with well-trained manpower. With the passage of time, a new dimension and perspective were given to the scheme to enable it meet the changing trends in the country.

The people who are required by law to do national service are Ghanaian students who graduate from accredited tertiary institutions and it is for a period of one year. The National Service Secretariat (NSS) has been given the constitutional mandate to provide the national service structure and formulate policies. Tens of thousands of students graduate every year and are posted to different sectors as National Service Personnel. Some of the sectors where personnel are posted are the private sector, education, health, ministries, department and agencies. In 2009 – 2010 service year, about sixty seven thousand (67,000) personnel were posted while in the 2010 – 2011 service year, fifty thousand and sixty nine (50,069) personnel were posted. Between sixty (60) and seventy (70) percent of the personnel are posted to augment the effort of teachers in our various public schools and the rest are distributed among the other sectors. Regardless of the sponsorship received by a student or the country in which the tertiary programme was completed the individual must enroll and complete one year National Service. The rules and regulations of the hosting organization govern the conduct of the personnel. In cases where the organization's rules conflict with that of the National Service Scheme, the former is ignored. However, in a situation where an institution sponsors a student to pursue a programme in the tertiary institution, the graduate is posted back or returns to their mother organizations. All benefits which the service personnel are due shall not be given to them till the personnel complete their service.

The National Service Scheme of Ghana, since its inception in 1973, has endeavoured through several means to improve the quality of service delivery. These means include pre-service and post-service activities. Prior to the pre-service orientation, a list of all final year students of the accredited institutions are submitted to the National Service Office and Pin Numbers are provided to all prospective National Service Personnel through their tertiary institutions. During the pre-service orientation, both the user agencies and the personnel are made aware of their roles. The personnel are enlightened on National Service; when and how it started, what it does, the need for the personnel to do the service which is

associated to its benefits. The personnel are also taught how to use the pin numbers to enroll on the net. Knowing the various qualifications or backgrounds available, both private and public organizations are asked to bring their requests for the number of National Service Personnel they may need with their respective backgrounds but with no specific names of service personnel attached. Based on the vacancies declared by the various organizations or institutions, personnel are posted to institutions and departments in the district, municipal and metropolitan assemblies across the nation. Postings of personnel are released on the net making it easier for them to assess it anywhere in the country unlike the manual type where postings were assessed only at the regional offices before registration at the region in which they are posted to.

Registration process takes place after the postings are released on the net. Personnel assess postings using their NSS Number. During the registration, pictures are taken and ID cards are produced for them. The final registration of personnel takes place at the district after the endorsement by Heads of Departments or institutions at their place of posting.  Orientation is organized for the personnel after the registration when they have reported and settled at their various places of posting in the district/region. The orientation is in two (2) phases. The first is done by National Service Secretariat where the District Chief Executive welcomes and thanks them for accepting posting to the district. The education director, the health director, Agric director and the national service director will also address the personnel. The district director of National Service Secretariat will elaborate the calendar for the service year and also go through the payment system with them. The Second phase of orientation is done at their various places of posting.

Monitoring of service personnel is done before the first payment. This is done to find out whether the National Service Secretariat was able to satisfy their user agencies with regards to the request made and check on the personnel at post; accommodation and their place of posting. Service personnel are paid a monthly allowance which is not taxable. The Ministry of Finance always determines the amount to be paid. This approved amount is paid to the personnel throughout the service period. Payment of this allowance is done based on the period the service personnel reports for duty at his/her designated post. However, corporations, statutory boards or churches or quasi-church organizations who accept service personnel in their organizations will be responsible for the payment of the monthly allowance. The service persons enjoy a month's annual terminal leave throughout the month of August each year. A service person shall be given a National Service Certificate after the successful completion of the service. Their supervisors or employers shall assess the service personnel during the one year of service after which the personnel would give their comment and sign. This would then be forwarded to the Regional Director by the end of May each year.

## DATA AND METHODOLOGY

The population for the study was made up of 2012/2013 year group of graduated tertiary students (National Service Persons).  All National Service Personnel visit the secretariat every month for their allowance. The researchers made arrangements with the secretariat to administer the questionnaires during one of such monthly visits. A total of three hundred and twelve (312) National Service Persons were targeted for the study.  However, out of three hundred and twelve (312) questionnaires distributed, 262 were received and only two hundred and thirty four (234) were eligible for analysis. This represents a response rate of  75%. This is above the average response rate postulated by Baruch (1999, p. 429). Both primary data was used in this study.  Primary data was collected using structured questionnaires which were filled out by the respondents. The study adopted the SERVQUAL questionnaire instrument by Parasuraman et al., (1985).The gap model and its accompanying service quality dimensions offered by Parasuraman et al., (1985) were adopted and used in the study.  In the model, quality of service is a function of both expectations and perception.  This can be modeled as:

$$SQ = \sum_{i=1}^{k} (P_{ij} - E_{ij})$$

(1)

Where:

SQ  = Overall service quality;
k    = number of attributes.
$P_{ij}$   = Performance perception of stimulus i with respect to attribute j.
$E_{ij}$   = Service quality expectation for attribute j that is the relevant norm for stimulus i.

By this model the gap score for each statement was calculated and totaled to compute the gap score for each service quality dimension. Descriptive statistical elements including frequency tables and charts were used to show the results. The compilation, editing and computation of the responses from the questionnaire enabled objective comment on the results. This proved essential in making suitable and objective recommendations on the findings.

## RESULTS

Demographic Profile of Respondents

In assessing the satisfaction and perceived service quality of the National Service Secretariat, demographic characteristics such as age, gender, and educational level play a crucial role. They are needed to be able to determine how they influence satisfaction of national service personnel. The detailed finding on respondents' demographic data and background characteristics are shown in Table 1. The age of the respondents (see Table 1) indicated that the age range varied between 18-30 (86.4 per cent), 31-40 (13.2 per cent), and 41-50 (0.4 per cent). 32.5 percent of the respondents employed in the study were females whilst the remaining 67.5percent were males. All the respondents were tertiary graduates with the highest from university constituting 79.06 percent followed by Polytechnics and Post graduates with 20.51 and 0.43 percent respectively. These may have very significant implications on how respondents that is National Service Personnel perceive satisfaction of the service delivery.

Table 1: Demographic Profile of Respondents

| Independent Variable | Number (N) | Percentage (%) |
|---|---|---|
| Age | | |
| 18-30 | 202 | 86.32 |
| 31-40 | 31 | 13.25 |
| 41-50 | 1 | 0.43 |
| | | |
| Gender | | |
| Male | 158 | 67.50 |
| Female | 76 | 32.50 |
| | | |
| Educational Level | | |
| Polytechnic | 48 | 20.51 |
| University | 185 | 79.06 |
| Postgraduate | 1 | 0.43 |
| Place of Posting | | |
| Education | 174 | 74.36 |
| Health | 23 | 9.83 |
| Assembly and Other Department | 37 | 15.81 |

*This Table presents demographic characteristics and postings of personnel.*

Factors Influencing Service Personnel Satisfaction

One of the objectives of this study was to determine the factors that influence the satisfaction of National Service Personnel in Ghana. This objective was achieved by using Principal Component Analysis based on Oblimin rotation method with Kaiser Normalization. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was found to be 0.872 and Bartlett's test of sphericity was also found to be significant (p <0.001). The result show that factors influencing National Service Personnel's satisfaction in Ghana about service rendered by National Service Secretariat were extracted to three components (see Table 2) Factors under Component One were mainly items from three dimensions of service quality namely empathy, assurance and responsiveness as depicted on Table 2. Considering the empathy dimension, factors that accounted for personnel's satisfaction were the ability of staff to refrain from acting busy or being rude when personnel ask questions; the ability of the National Service Scheme staff to keep personnel informed about when service would be performed; and their capability to understand the specific needs of service personnel. National Service Personnel felt that their satisfaction level about the service delivery would probably go high when they are treated with utmost care and given individualized attention. The major determinants of clients' satisfaction and quality of care which has been established by many studies are friendliness, care, courtesy and respectful attitudes of employees (Morgan, Fenwick, McKenzie, and Wolfe, 1998; Aldana, Piechulek, and Al-Sabir, 2001).

Table 2: Pattern Matrix

| Pattern Matrix[a] | Component | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| tan6 | | 0.819 | |
| tan7 | | 0.562 | |
| tan8 | | 0.611 | |
| tan9 | | 0.719 | |
| rel10 | | | |
| rel11 | | | |
| rel12 | | | |
| emp13 | | | |
| emp14 | 0.651 | | |
| emp15 | 0.844 | | |
| emp16 | 0.835 | | |
| ass17 | 0.646 | | |
| ass18 | 0.577 | | |
| ass19 | 0.570 | | |
| res20 | 0.623 | | |
| res21 | 0.639 | | |
| res22 | | | |

*Extraction Method: Principal Component Analysis. Rotation Method: Oblimin with Kaiser Normalization. This Table depicts the results of the principal component analysis which was used to determine the factors that influence the satisfaction of the national service personnel. The first column indicates the service quality dimensions. Thus tangibility (tan), reliability (rel), empathy (emp), assurance (ass) and responsiveness (res).*

Further, the ability to inform personnel when service would be delivered supports the study by Harding (2000). He reported that effective communication/interpersonal relationship and providing sufficient information are significant determinants of satisfaction to service delivery. According to the Service Personnel, whenever information about service delivery was passed on to them, they felt that their needs and expectations were strongly understood by the secretariat. Avortri et al., (2011) also identified the feeling of being treated with care and respect as a key predictor of satisfaction. This requires a pragmatic effort by the management of the secretariat to develop policies and strategies that would seek to ensure that these factors are incorporated in the daily operations of the National Service Scheme since their presence would have a positive influence on service delivery.

The finding further indicated that factors under the assurance dimension that contribute to personnel satisfaction were, the feeling of being secured by service personnel whenever they enter the National Service Secretariat and use their facility; the ability of the staff to have the knowledge to answer service personnel question; and the availability of everything needed to provide quality service. Fitzsimmons (2011), explained that assurance is the knowledge and courtesy of the staff of an organization and the ability to convey trust and confidence to the customers. It comprises competence to carry out the service, effective communication with the customer, politeness and respect for the customer and the general attitude that the server has the customer's best interests at heart. He advanced an argument that for clients to be satisfied with service rendered, the service provider should be able to convey trust and confidence to the customer. According to service personnel, their level of satisfaction is likely to go high when staff demonstrates the knowledge and ability to render the required or said service. This suggests that management should commit themselves to ensuring that these factors are considered critically so as to help satisfy service personnel.

The finding again pointed out that factors which contribute significantly to personnel satisfaction under component one came from responsiveness. These factors were, the willingness of National Service Scheme staff to answer personnel questions and the ability of staff to respond to the needs of personnel in such a way that personnel would not feel that they are wasting the staff's time. Fitzsimmons (2011) discussed responsiveness asthe willingness of an organization to assist their consumers by serving them with a fast, good and quality service. He asserts that when customers are kept waiting especially for no obvious reason, it brings about unnecessary bad perceptions of quality. This means that national service personnel would not be satisfied with service delivery if it is not delivered promptly. He continued to explain that the ability to recover quickly with professionalism when a service failure arises can bring about very good perceptions of quality. Atinga, Abekah-Nkrumah, and Domfeh (2011) conducted a study in the healthcare industry and identified that waiting time is a significant factor in predicting the satisfaction of patients with quality of healthcare delivery. This means that service delivery with no or little waiting time would positively affect patients' satisfaction. These call for the secretariat to consider and reengineer its operations to ensure that these factors are managed to meet the satisfaction of service personnel.

Factors contributing significantly to personnel's satisfaction about service delivery of NSS extracted under Component Two were mainly from the tangibility dimension. These factors were: the presence of spacious office for convenient conduct of business; the ability to locate the office of the secretariat with ease; the attractiveness and cleanliness of the secretariat at all times; and the availability of up-to-date equipment. According to service personnel, the secretariat lacks space at the office which often results in inconveniences anytime it became necessary for all personnel to meet at the office. These inconveniences consequently lead to their dissatisfaction about services rendered by the secretariat. The result further pointed out that the secretariat lacks up-to-date equipment such as a photocopier which in most cases hampers the operations of the secretariat forcing service personnel to walk long distances in search of photocopiers for copies of their documents to be made whenever the need arose. This negatively affects personnel's satisfaction and perceived service quality of the secretariat. The attractiveness and cleanliness of any facility create a first impression about the quality of service rendered. For that matter, service personnel are of the view that their decision about the quality of service rendered by the secretariat is influenced by the attractiveness and cleanliness of the secretariat. This finding confirmed previous studies conducted in the healthcare industry (Hardy, West and Hill, 1996; Hair, 1998) that one of the strong factors influencing patient satisfaction with the quality of healthcare delivery turned out to be the cleanliness of the hospital surroundings.

Gap Score Analysis for Tangibility

Zeithaml, Parasuraman and Berry (1990) stated that tangibility represents the appearance of physical facilities, personnel, equipment and communication material and the state of the physical environment. Tangibility falls in the functional quality. The results showed that the expectation and perception scores for tangibility were 16.30 and 11.23 respectively (see Table 3). The difference resulted in a negative score of -5.07. The negative score of the dimension stemmed from the fact that the secretariat lacks spacious offices for the smooth conduct of business; there is difficulty in locating the office of the Secretariat; and also, the secretariat lacks up-to-date equipment such as printers and photocopiers as depicted on Table 3 below. However, the score for cleanliness was positive suggesting the premises of the secretariat and the staffs are very clean. These call for management of the scheme to find ways of improving these conditions to help satisfy service personnel.

Table 3: Gap Score for Tangibility

| Service Quality Item | Expectation Score | Perception Score | Gap Score |
|---|---|---|---|
| Spacious and attractive secretariat for smooth conduct of business | 4.47 | 2.07 | -2.40 |
| Easy location of the National Service Secretariat | 4.44 | 3.00 | -1.44 |
| Attractive and clean environment of the secretariat | 2.92 | 3.56 | 0.64 |
| Up-to-date equipment of the secretariat | 4.47 | 2.60 | -1.88 |
| **Total Score** | **16.30** | **11.23** | **-5.07** |

*This Table indicates the gap score report for tangibility. This first column presents the quality items and the last column presents the gap score. That is the difference between expectation score (column two) and perception score (column three).*

Gap Score Analysis for Reliability

The result revealed that service personnel's expectations as far as reliability was concerned were not met. Their total expectation and perception scores were 12.98 and 10.90 respectively resulting in a negative overall score of -2.08 for reliability. This finding suggests that the National Service Secretariat was not reliable in service delivery. According to the result (see Table 4), the secretariat could not deliver prompt service which led to time wasting and long queues and waiting time. Also, the secretariat works from 8:00 am to 5:00pm but according to service personnel, service delivery starts at around 9:30am and closes before 5:00pm which is a clear sign of not being reliable. Zeithaml, et al (1990) state that "consumers consider reliability to be one of the most significant dimension in assessing service quality. Consumers require service providers to look very good, be responsive, be knowledgeable and nice and be empathetic. Above all, customers require that service providers perform the services they assured to carry out precisely and dependably". For this reason it is imperative for management of the secretariat to put measures in place to ensure that these issues are addressed to help improve service delivery process of the secretariat.

Table 4: Gap Score for Reliability

| Service Quality Item | Expectation Score | Perception Score | Gap Score |
|---|---|---|---|
| Prompt service delivery without wasting time | 4.33 | 3.71 | -0.62 |
| Quality service delivery at all time | 4.32 | 3.72 | -0.60 |
| Working hour between 8:30am and 5:00pm | 4.33 | 3.47 | -0.86 |
| **Total score** | **12.98** | **10.90** | **-2.08** |

*This Table indicates the gap score report for reliability. This first column presents the quality items and the last column presents the gap score. That is the difference between expectation score (column two) and perception score (column three).*

Gap Score Analysis for Empathy

Considering the empathy dimension, service personnel's expectations were exceeded and for that matter they were satisfied. The dimension recorded expectation and perception scores of 16.53 and 17.27

respectively which consequently led to an overall positive gap score of 0.74 depicting high level of service personnel's satisfaction. From Table 5, it is clear that service personnel expectations were met due to the fact that they felt the scheme had their interest at heart and therefore did inform them when service will be performed. Also the staff of the secretariat never acted busy or rudely when service personnel asked questions. This finding supports the study conducted by Peprah (2013) which revealed that the rudeness of nurses and other staff, the ability of the hospital to provide individualized attention to the aged and physically challenged, understanding the specific needs of patients, and keeping patients informed about when service would be performed were some of the key factors under empathy dimension that determined patients' satisfaction. It is therefore necessary that the National Service Scheme increases its efforts in enhancing the empathy aspects of the service delivery since it has great influence on the satisfaction of service personnel.

Table 5: Gap Score for Empathy

| Service Quality Item | Expectation Score | Perception Score | Gap Score |
|---|---|---|---|
| National Service Personnel interest at heart by the scheme | 4.01 | 4.46 | 0.45 |
| The staff acting busy or rude when service personnel ask questions | 4.06 | 4.49 | 0.43 |
| Informing service personnel of when service will be performed | 4.08 | 4.34 | 0.26 |
| The staff of the scheme understanding the specific needs of the service personnel | 4.38 | 3.98 | -0.40 |
| **Total score** | **16.53** | **17.27** | **0.74** |

*This Table indicates the gap score report for empathy. This first column presents the quality items and the last column presents the gap score. That is the difference between expectation score (column two) and perception score (column three).*

Gap Score Analysis for Assurance

Another interesting finding of the study was that assurance which is explained by Parasuraman et al., (1988) as the knowledge and courtesy of the staff of an organization and the ability to convey trust and confidence had a positive gap score of 0.65 as shown in Table 6. This means that the service personnel's expectations were generally exceeded resulting in high level of satisfaction. This finding agrees with the study of Sultana and Rana (2010) which found out that the assurance gap between expectation and perception of the students was positive meaning that the students' expectations on assurance was being fulfilled.

Table 6:  Gap Score for Assurance

| Service Quality Item | Expectation Score | Perception Score | Gap Score |
|---|---|---|---|
| The National Service Personnel feel secured to enter the secretariat and use its facility | 3.36 | 3.93 | 0.57 |
| The knowledge of the staff to answer service personnel questions | 4.37 | 4.00 | -0.37 |
| The staff had everything to provide quality service | 3.08 | 3.53 | 0.45 |
| **Total score** | **10.81** | **11.46** | **0.65** |

*This Table indicates the gap score report for assurance. This first column presents the quality items and the last column presents the gap score. That is the difference between expectation score (column two) and perception score (column three).*

Gap Score Analysis for Responsiveness

According to Zeithaml, et al (1990) responsiveness is concerned with the extent that the employees are ready to provide service. This dimension is about providing information about the service, giving prompt service, employee's willingness to help the consumers, that is, the employees are on no account too busy to respond to the needs of their customers in this case National Service Personnel. From Table 7, service personnel's overall expectation for responsiveness was 12.49. At the same time, their overall perception about this dimension is 12.98. The difference between expectation and perception on this dimension is 0.49, which shows that the National Service Secretariat is fulfilling their expectation on readiness and willingness to provide service. The service personnel were satisfied with the quality described in this dimension.

Table 7: Gap Score for Responsiveness

| Service Quality Item | Expectation Score | Perception Score | Gap Score |
|---|---|---|---|
| The willingness of the staff to answer service personnel questions | 4.02 | 4.44 | 0.42 |
| The staff make me feel I'm not wasting their time | 4.00 | 4.45 | 0.45 |
| The staff is willing to help with a sincere interest | 4.47 | 4.09 | -0.38 |
| **Total score** | **12.49** | **12.98** | **0.49** |

*This Table indicates the gap score report for responsiveness. This first column presents the quality items and the last column presents the gap score. That is the difference between expectation score (column two) and perception score (column three).*

## DISCUSSIONS

This objective was achieved by making use of the service quality gap model developed by Parasuraman et al., (1985) which states that quality of service is a function of both perception and expectations. Service personnel's satisfaction was assessed on the basis of service quality dimensions. The study found that service personnel's expectations were exceeded in terms of empathy, assurance and responsiveness of the secretariat. They were satisfied with the service delivery of the secretariat as far as these dimensions are concerned. On the other hand, the result further showed that service personnel were not satisfied with tangibility and reliability dimensions as these dimensions obtained negative gap scores. Factors influencing service personnel's satisfaction were determined using Principal Component Analysis based on Oblimin rotation method with Kaiser Normalization. From the analysis factors which contribute significantly to service personnel's satisfaction were the ability of staff to refrain from acting busy or being rude when personnel ask questions, the ability of the NSS staff to keep personnel informed about when service would be performed, and the capability to understand the specific needs of service personnel. Others include the feeling of being secure by service personnel whenever they enter the NSS office and use their facility, the ability of the staff to have the knowledge to answer service personnel questions, and the availability of everything needed to provide quality service. The willingness of NSS staff to answer personnel questions and the ability of staff to respond to the needs of personnel in such a way that personnel would not feel that they were wasting the staff's time were also extracted as factors influencing service personnel's satisfaction. Finally, other factors include the presence of spacious office for convenient conduct of business, the ability to locate the office of the secretariat with ease, the attractiveness and cleanliness of the secretariat at all times, and the availability of up-to-date equipment.

## CONCLUSIONS

The objective of the study was achieved by making use of the service quality gap model developed by Parasuraman et al., (1985). Service personnel's satisfaction was assessed on the basis of service quality dimensions. The study found out service personnel's expectations were exceeded in terms of empathy, assurance and responsiveness of the secretariat. The personnel were satisfied with the service delivery of the secretariat as far as these dimensions are concerned. On the other hand, the result further showed that service personnel were not satisfied with tangibility and reliability dimensions as these dimensions obtained negative gap scores. From the Factor Analysis, factors which contribute significantly to service personnel's satisfaction include the ability of NSS staff to refrain from acting busy or being rude when personnel ask questions, the ability of the NSS staff to keep personnel informed about when service will be performed, and the capability to understand the specific needs of service personnel. Others include the feeling of being secure by service personnel whenever they enter the NSS office and use their facilities, the ability of the staff to have the knowledge to answer service personnel question, and the availability of everything needed to provide quality service. It is therefore important that the National Service Scheme considers all the necessary strategies to improve on the strengths and reengineer its service delivery to help satisfy its clients. This research has certain limitations as in other research works. The study focused on only National Service Personnel. Views of user agencies' could not be captured; therefore in future

researchers should consider them. Also the research could be expanded to cover and compare other public and private institutions in Ghana.

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# THE MEDIATING EFFECT OF FELT ACCOUNTABILITY ON THE RELATIONSHIP BETWEEN PERSONALITY AND JOB SATISFACTION

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## ABSTRACT

*The purpose of this research is to examine the potential that the "Big Five" dimensions of personality determine whether or not individuals feel accountable for their job-related behaviors and if that predicts whether or not they feel satisfied with their jobs. Drawing on disparate, but relevant research form these three fields, this research proposes that the five personality dimensions differentially predict feelings of individual answerability for work-related attitudes and behaviors and concomitant levels of job satisfaction. The results suggested that four of the "Big Five" factors (i.e., conscientiousness, extraversion, agreeableness and emotional stability) predicted felt accountability and that felt accountability partially intervened between them and job satisfaction. For human resource managers, the findings suggest personality metrics are still useful selection tools because they help place more answerable, involved, employees who are more likely to feel satisfied with their jobs.*

## INTRODUCTION

Independence Day in the United States is a very popular holiday usually spent with family and friends. Typically, it involves cooking, socializing and, based on geographic proximity, going to the beach. One might not think a question of accountability would arise around these festivities. However, such was not the case for one governor in the northeastern US over the Fourth of July weekend in 2017. His state could not pass a balanced budget by the holiday weekend so its state parks and beaches be were closed. That governor was roundly criticized in the national media when he was seen with his friends and family, celebrating on a state beach closed to the public. The media's implication was clear: the governor did not feel accountable to shepherd the legislature to pass a budget so that local citizens, businesses and tourists could benefit. He simply took advantage of his formal position to enjoy what others could not without regard to the economic ramifications or the optics of the situation.

Prior research called accountability "the adhesive that binds social systems together" (Frink & Klimoski, 1998). Accountability is fundamental to social functioning, as well as the integration of organizations and individuals within it (Hall, Frink, Ferris, Hochwarter, Kacmar, & Bowen, 2003). Scandals in corporate and political life are often defined in terms of accountability lapses. Regardless of size, societies and organizations are founded on sets of shared expectations for behavior. These behavioral norms are sometimes explicit (e.g., laws or codified written guidelines for employee behaviors), but more likely, they are informal, socially understood, prescriptions for getting along. Fundamentally, if individuals are not answerable for their behaviors, shared expectations do not exist, thus, leaving a vacuum of social order (Frink & Klimoski, 1998, 2004; Tetlock, 1985). In short, societies break down if nobody is

accountable. Unfortunately, despite the necessity for accountability, not everyone feels answerable for their behaviors.

This research is not intended to malign politicians' reputations but rather to investigate both some antecedents of feeling answerable for job duties and their possible consequences. Specifically, this research examines the effects of five ubiquitous personality dimesons (i.e., conscientiousness, agreeableness, extraversion, openness and emotional stability) (e.g., Barrick & Mount, 1991; Goldberg, 1990, 1992) on individuals' inclinations to emotionally and behaviorally engage themselves in the proper execution of their work-related duties. Furthermore, this research then attempts to determine whether or not that enhances individuals' levels of job satisfaction.

This research will proceed as follows: it will review the current state of the literature related to the study variables of interest. It will then discuss the sample, the data derived from it and the analytic tools used to test the hypotheses. After that, the author fleshes out the strengths and weaknesses of the research as well as its implications for theory and practices. Further discussion of the directions of possible future research on the subject then follows. Finally, the researcher provides a concise concluding synopsis of the major elements of the paper.

## LITERATURE REVIEW

The following section covers material related to the major conceptualizations of accountability, personality and job satisfaction. For each of variables in this study, the author will discuss competing decisions and dimensions of the construct, as well as the rationale for couching them as he has in this research. The researcher also states the study's hypotheses in this section.

<u>Accountability</u>

Accountability, conceptually, covers a wide array of phenomena. In organizational studies, accountability includes attitudes, behaviors and associated mechanisms at play throughout the hierarchy of an organization. Accountability, for the purposes of this research, describes what Hall et al., (2003, p. 33) called:
*"...the real or perceived likelihood that the actions, decisions, or behaviors of an individual, group, or organization will be evaluated by some salient audience, and that there exists the potential for the individual, group, or organization to receive either rewards or sanctions based on this expected evaluation."*

Accountability correlates with or encompasses many constructs discussed in business ethics. For example, McWilliams and Siegel (2001) noted that social responsibility (CSR) (i.e., organizational actions that go beyond legal requirements to promote the "social good") is subsumed by the broader notion of accountability. It is, however, distinguishable from (CSR) in some ways. As noted above, one critical distinction is that (CSR) is typically promoted by top management or owners, whereas accountability, in most cases, drives behaviors at all levels of an organization.

Generally, the intelligibility and transparency of formal accountability systems benefits organizations. Mitchell, Hopper, Daniels, George-Falvy and Ferris (1998) noted, formal accountability systems typically reduce the likelihood of unethical decision making provided such systems are not linked to dubious practices such as increased commitment to poorly performing projects, ethically unsound courses of action (Simonson & Staw ,1992) or wasting resources (Adelberg & Batson, 1978). As such, increased accountability is relevant to the discussion of ethics, morals and values, in spite of the possibility of individuals'' misguided actions. With respect to the bodies/individuals to whom employees are accountable, Schlenker and Weigold (1989) suggested that in addition to stakeholders, an important

audience to whom individuals can be accountable is themselves. According to Frink and Klimoski (1998; 2004), such self-accountability is driven by personal ethics, values, goals and family obligations. Thus, accountability can be both formal and informal as well as to others and ourselves.

Formal and Informal Accountability Mechanisms**.** Formal organizational accountability denotes observable, objective, external (i.e., outside the individual) mechanisms, instituted in order to monitor employee behaviors and ensure compliance (Hall, et al, 2003). These systems typically include performance evaluation procedures and accounting systems: fundamental implements of coordination and control intended to guide employees' behaviors in organizationally sanctioned directions (Ferris, Mitchell, Canavan, Frink, & Hopper, 1995; Hall & Ferris, 2011).

Multiple dimensions of accountability permeate the management, social psychology and philosophy literatures (e.g., Ferris et al., 1995; Frink & Klimoski, 1998, 2004; Lerner & Tetlock, 1999). Central to most these conceptualizations, is that individuals are evaluated by their actions and feel a need to justify their behaviors (Schlenker, Britt, Pennington, Murphy, & Doherty, 1994). Building on this work, Hall et al. (2003) noted that accountability has both implicit and explicit expectations that individuals' decisions or actions will be subject to appraisal by some salient audience (e.g., supervisors, group members, organizations) which has the potential to either reward or punish them for their compliance. Furthermore, it is also possible also that individuals feel accountable to themselves due to a deeply held set of standards (e.g., self-avowed religious principles) (Schlenker & Weigold, 1989).

Frink and Klimoski (1998; 2004) also contended that accountability models in organizations should be conceptualized as both formal and informal in nature. They called for models of accountability to identify both external conditions (e.g., things outside the individual), and internal conditions. Furthermore, they noted that both objective and subjective factors of formal (e.g., accounting procedures) and informal accountability mechanisms (e.g., organizational norms, beliefs, values and culture) should be identified in order to better describe to what, whom, how and why individuals become answerable (Hall et al, 2003).

Prior research noted the utility of distinguishing formal and informal accountability because not all formal systems will be uniformly applied to all employees (Frink & Klimoski, 1998; 2004). In fact, some formal systems might exist for some groups of employees but not for others. Furthermore, informal workplace norms have the potential to make a significant impact on how formal accountability requirements are interpreted and implemented (Hall et al., 2003). As such, both formal and informal facets of the accountability environment influence the nature and degree of individuals' subjectively-experienced levels of accountability. Put another way, these facets determine how accountable individuals "feel" as opposed to how accountable they might be in the objective sense, for better or worse.

Felt Accountability. As previously mentioned, much of the existing literature on accountability has treated it as an objective condition (Lerner & Tetlock, 1999). However, that lens discounts the existence and potency of the subjective experience of accountability. Specifically, the existence of objective accountability mechanisms does not guarantee that employees will either internalize or abide by their prescriptions (Frink & Klimoski, 1998; 2004). Employees might fail to recognize the existence (or importance) of objective accountability mechanisms or interpret them differently than intended. As Kurt Lewin (1936) concluded, it is not necessarily objective reality that drives cognitions and behaviors but rather individuals' subjective interpretations of it. As such, it is employees' subjective interpretations of these objective mechanisms that really matters in terms of their behavioral responses. Thus, per the phenomenological view of accountability proposed by Tetlock (1985, 1992), the utility of these drivers depends on whether or not accountability features in the environment will make individuals *feel* accountable (Hall et al., 2003; Hall & Ferris, 2011).

Just because a company has formal accountability systems, does not mean that individuals who deviate from them *feel* remorseful or answerable to its stakeholders (e.g., employees, shareholders, regulatory agencies, the community, etc.) for their consequences of their actions. Consider, for example, Richard Scrushy at Health South. He perpetrated a hoax worth 1.4B USD involving the creation of fictitious transactions intended to enhance the appearance of it's the company's earnings. Although acquitted initially on those charges, he was later convicted when caught trying to bribe his way onto the medical regulatory board in Alabama. It is possible that both personality attributes (e.g., high Machiavellianism) and cues in the accountability environment helped promote that problem. For example, organizations might create (or fail to inhibit) informal accountability norms that help executives defend illegal or unethical behaviors to employees and shareholders or at least to themselves (Hall et al., 2003). For example, executives might publically extol the virtues community within the firm and justify falsifying earnings by suggesting that it is the only way (if only in the short term) to make sure everyone maintains their employment.

Job Satisfaction and Human Resource Literature: Theory and Practice

Psychologists and management scholars developed various theories of job satisfaction. These theories usually present hierarchical models of things that promote satisfaction (Petrescu & Simmons, 2008). The sources of satisfaction can be either intrinsic or extrinsic (e.g., Herzberg, 1964). Intrinsic motivation involves both the elements of the work itself and individual characteristics like attitudes or personality (Royle, 2016). Extrinsic sources promote dissatisfaction (Herzberg, 1964). Herzberg (1964) called these "hygiene" factors. They could involve any non-job specific duty ranging from relationships to coworkers and supervisors, to lighting conditions, the cafeteria menu or issues of workplace climate (Roethlisberger & Dickson, 1939; Luchak, 2003).

Prior research often broached the topic of job satisfaction with a professional skepticism (e.g., Freeman, 1978) because it is, by nature, subjective. As such, empirical investigation on the topic, either implicitly or explicitly, indicated that job satisfaction is comprised of multiple individual and job characteristics which constituted a utility function (Clark & Oswald, 1996; Easterlin, 2001). In fact, job satisfaction is basically a rational choice that denotes individuals' preferences for some activities instead of others (e.g., Royle, 2016).

Many human resource management (HRM) practices (e.g., working in teams, greater employee discretion over time management, involvement in decisions and equitable pay schemes) enhance employee productivity (Hackman & Oldham, 1975; Boselie & Van der Wiele, 2002). Nevertheless, increased levels of job satisfaction are not likely to occur if employees believe that exerting effort in a particular direction is, informally, considered "bad" by their coworkers. If employees' aim is to maximize the return on investment of their labors (Royle, 2016), a lack of applied effort is not likely to enhance either productivity or satisfaction.

Of course, some discussion of the relationship between pay and job satisfaction is warranted. Clark and Oswald (1996) demonstrated that reported levels of well-being is only mildly correlated with income. In fact, no relationship between pay and satisfaction exists for those working in higher education (for more discussion see Hackman & Oldham, 1975) (Belfield & Harris, 2002). Contemporary research demonstrates only a weak relationship between income and life satisfaction (e.g., Layard 2006; Clark 2001). That research also indicated that despite rising wages levels, job satisfaction remained constant. Furthermore, research indicated that relative economic standing, as opposed to gross income, impacts job satisfaction most (Clark & Oswald, 1996).

A great deal of research exists on the effects of implementing pay practices (e.g., Black & Lynch, 2004; Cappelli & Neumark, 1999; McCausland, Pouliakis, &Theodossiou, 2005). For example, Bloom and

Michel (2002), compared the merits of dispersed versus compressed pay systems. Dispersed pay structures potentially induce higher levels of performance if employees work more diligently to move up the pay ladder, or fall behind due to poor individual performance (Bloom & Michael, 2002; Bucciol, Foss, & Piovesan, 2014). Ideally, this means promoting and compensating the best performers in competitive environments, and providing pay differentials for high-risk jobs.

Unfortunately, dispersed pay systems are not a panacea for all working environments and employees. Based on the tenants of tournament theory (e.g., Bloom & Michel, 2002), dispersed pay systems might also promote workforce instability, lower levels of satisfaction and, ultimately, higher turnover. By contrast, compressed pay promotes team effort and cooperation by distributing outcomes in a more egalitarian way; particularly when more people join the team (Bucciol et al., 2014). Under those conditions, compressed pay systems reduce turnover (Beaumont & Harris, 2003). Nevertheless, compressed pay can discourage effort beyond the bare minimum to remain employed and might be perceived as unfair if members are thought to be socially loafing (Bloom & Michael, 2002; Bucciol et al., 2014). Ultimately, Bloom and Michael (2002) contended that it is difficult to identify with accuracy the effect of the pay distribution within a firm on job satisfaction.

Personality

Definitions of personality abound (Mount, Barrick, Scullen, & Rounds, 2005; Saucier & Goldberg, 1998). Allport (1937) found over 50 different definitions of the term and considered it one of the most abstract concepts in the English language. Varying definitions can be found throughout the fields of theology, philosophy, sociology, law and psychology (Alport, 1937; Royle, 2016). Although some contemporary scholars of personality disagree about its meaning, there is broad agreement that it is a relatively stable set of dispositional traits the help predict behaviors (Mount et al., 2005). McCrae and Costa (1989) contended that personality is a constellation of enduring emotional, interpersonal, experiential, attitudinal and motivational styles that explain differential behaviors across situations. Funder (2006) considered personality "characteristic patterns of thought, emotion, behavior and the psychological mechanisms (whether manifest or not) behind those patterns". Ultimately, personality is a stable base for evaluating behavior. In aggregate, personality dimensions help determine individuals' affective, behavioral and cognitive styles. Personality dimensions also have significant predictive power for job satisfaction (Judge, Locke, Durham, & Kluger, 1998).

Hogan (1991) contended that personality has multiple and sometimes conflicting definitions and dimensions. The failure distinguish them confuses the situation. His conceptualization is driven by individuals' social reputations. In other words, personality is a function of the way others perceive a given individual (Hogan, 1991). This paradigm views personality from the observer's perspective and is relatively objective (i.e., verifiable and public). A second component of his definition of personality also contended that individuals behave in characteristic ways but that some of its dimensions are private and can only be inferred. This component of personality is appropriate to this research because, as noted above, feeling accountable might not be easily directly observed and is inherently intrapersonal.

Personality has implications for vocational interests, proficiency and levels of satisfaction (Royle, 2016). Various notions of vocational interests over the last several decades as they relate to personality (Dawis, 1991; Savickas, 1999). Some researchers contended that vocational interests are broader constellations of likes and dislikes that lead to consistent patterns of behavior and preferences for behaviors (Berdie, 1944; Kuder, 1997). Holland (1999) contended that vocational interests are essentially an aspect of personality. Although this research contends vocational interests are not strictly synonymous with personality, it is clear that they share with personality a similar conceptual space. Taken together, vocational interests are stable dispositional traits that influence behavior primarily through one's preferences for certain activities, types of people, specific environments, and which, ultimately, also influence levels of satisfaction at work

(e.g., Judge et al., 1998; Royle, 2016). To be clear, this research implicitly assumes, as do Human, Biesanz, Finseth, Pierce and Le (2014), that personality inclines individuals to behave in a particular, predictable way and that deviating from that path is relatively unattractive to them.

The "Big Five" Factor Model. Most contemporary researchers agree that personality can be reduced to five basic factors, hence, the "Big Five" model (Goldberg, 1990; 1992). The 5-factor structure emerged from the analyses of trait adjectives in multiple languages. Further supporting evidence came from personality inventories and expert judgement of the dimensionality of existing measures (McCrae & John, 1992). The Big Five's dimensions are culturally neutral and generalize across populations (McCrae & Costa, 1997; Pulver, Allik, Pulkkinen, & Hamalainen, 1995; Salgado, 1997). Furthermore, as noted above, these traits remain largely unchanged over time (Costa & McCrae, 1992, 1988). Prior research also concluded that these five factors have genetic precursors (Digman, 1989). Heredity substantially impacts the generational dimensions of personality (Jang, Livesley, & Vernon, 1996) and has implications as far reaching as differentially predicting leadership ambitions (Judge, Bono, Ilies, & Gerhardt, 2002) and life expectancy (Friedman, Tucker, Schwartz, Martin, Tomlinson-Keasey, Wingard, & Criqui, 1995). The five factors are as follow: emotional stability (also referred to as neuroticism), extraversion, conscientiousness, agreeableness and openness to experience (Goldberg, 1990; 1992).

Of the Big Five factors, conscientiousness is most universally related to enhanced job performance (Barrick & Mount, 1991; Salgado, 1997). Conscientiousness is comprised of three sub-components: achievement orientation (e.g., persistence and diligence), dependability (e.g., reliability and carefulness), and orderliness (e.g., organization and planning). As such, conscientious individuals demonstrate higher levels of self-control, greater achievement needs and more persistence (Costa, McCrae, & Dye, 1991). Not surprisingly, conscientiousness predicts success at work related tasks (Schermerhorn, Hunt, & Osborn, 2008). Furthermore, research demonstrated that conscientiousness lowers the incidence of counterproductive work behaviors (Hogan & Ones, 1997), increased proactive employee involvement (Wanberg, Watt, & Rumsey, 1996), enhanced retention (Barrick, Mount, & Strauss, 1994) and reduced absenteeism (Judge, Martocchio, & Thoresen, 1997). As noted, some evidence also suggested that conscientious individuals live longer, although the mechanisms that promoted that are not fully understood (Friedman et al., 1995).

This research hypothesizes that conscientiousness promotes job satisfaction to the extent that satisfied employees are motived (see Hackman & Oldham, 1975), and that it is at least partially incumbent that they feel answerable for their job duties. Given that conscientious individuals are planning oriented, dutiful and diligent, it follows that they would feel answerable for their job duties because they feel compelled by their internal needs to demonstrate competency (Cavanaugh, Boswell, Roehling, & Boudreau, 2000). Only by first exerting sufficient effort to master their job descriptions would conscientious individuals feel they could appropriately answer for those duties and, therefore, enhance their levels of satisfaction (see Figure 1). As such:

> *Hypothesis 1: Felt accountability mediates the relationship between conscientiousness and job satisfaction.*

Extraversion is another prominent factor in psychological research given that it appears in most personality measures (even those that predate the Big Five). Obviously, it connotes sociability but also includes a broader constellation of components. Watson and Clark (1997) contended that extraverts are sociable, but might also more active and impulsive, less dysphoric, and less introspective than introverts. Extraversion usually promotes positive emotions. Extraverts are active (e.g., adventuresome and assertive) and socially oriented (e.g., outgoing and gregarious). However, others might also consider them pressuring (e.g., dominant and ambitious). Furthermore, extraverts are more likely assume positions of leadership and have more close friends (Watson & Clark, 1997). Extraverts also tend to seek

positions of authority in group settings due to their gregariousness and relative ease of ingratiation and confidence gaining (Judge et al., 2002).

Per Watson and Clark's (1997) observations, this research contends that extraversion promotes job satisfaction because of its trait positive affective component. However, this research proposes that felt accountability intervenes in that relationship. Because extraverts tend be adventuresome and also ingratiate themselves (presumably successfully) to coworkers and supervisors, they are likely to have more training, promotions, better pay and more exciting assignments (Wayne & Liden, 1995). Furthermore, based on the tenants of social exchange theory (Blau, 1964) and the norm of reciprocity (Gouldner, 1960) extraverts are likely to feel answerable due to the visible frequent, friendly, interactions they have with their evaluating audience and the opportunities they have to reciprocate with gratitude and compliance. That interaction would, thus, promote satisfaction. Therefore:

> *Hypothesis 2: Felt accountability mediates the relationship between extraversion and job satisfaction.*

Agreeable individuals cooperate well with others. Typically, they are understanding and compassionate. Others consider them likeable because they are usually good-natured, cheerful and gentle (Barrick & Mount, 1991). Unlike the other Big Five factors, agreeableness might be of little help or even a hindrance under some circumstances (e.g., extremely agreeable individuals may forego opportunities at work in order to please others) if considering job performance alone. Barrick and Mount's (1991) meta-analysis of personality indicated no consistently positive relationship between agreeableness and performance. However, agreeableness has a significant positive relationship with job satisfaction. This is due largely to the fact agreeable employees are generally liked and they are able to maintain positive working relationships with others. To those high in agreeableness it is often more important to get along than get ahead (Hogan & Holland, 2003). To the extent the getting along and being a member of an organization is a personal priority to agreeable individuals, enhanced job satisfaction is likely because it is easily facilitated by those objectives. Furthermore, it is possible that agreeable individuals are satisfied in their jobs only if harmony prevails (Royle, 2016). With respect to felt accountability, George and Brief (1992), noted that agreeable individuals are given to higher levels of contextual performance (i.e., organizational citizenship behaviors). Prior research indicated agreeable individuals might feel they answer for others (Royle & Hall, 2012). However, they must feel answerable for their own jobs before they answer for others and take on additional organizational chores to bolster their coworkers (Royle & Hall, 2012). Nevertheless, agreeable employees would find that satisfying. Therefore:

> *Hypothesis 3: Felt accountability mediates the relationship between agreeableness and job satisfaction.*

Openness to experience has two primary components: intellect (e.g., abstract understanding and reasoning skills) and unconventionality (e.g., being imaginative, autonomous, unconventional). Prior research indicated that along with agreeableness, openness does not universally enhance job performance (Barrick & Mount, 1991). However, openness does have important implications for job satisfaction and even performance for certain types of jobs. For example, Francesco and Gold (2005) noted that openness predicted better performance and higher levels of satisfaction for expatriate managers. Furthermore, Lounsbury, Moffitt, Gibson, Drost and Stevens (2007) contended that open individuals are often attracted to, and find satisfying, occupations in fields that are intellectually intense, quickly changing and which demand unconventional thinking (e.g., high technology). If individuals are high in openness, are flexible, forward thinking and intellectual, they are likely to master the components of their jobs readily. If they do, it is likely they feel answerable for demonstrating their understanding of those components and imaginative enough to feel that they can build on those job duties what might be necessary in the future. This could promote both competence and autonomy, thus, enhancing satisfaction. Therefore:

> *Hypothesis 4: Felt accountability mediates the relationship between openness and job satisfaction.*

Costa and McCrae (1988) contended that emotional stability (alternatively called neuroticism) is the most pervasive trait across personality measures. However, it might also be the one that takes the longest for individuals to perceive in others (Pretsch, Heckmann, Fluger, & Schmitt, 2014). It appears in almost every conceptualization of personality. Neuroticism encompasses two primary inclinations: a proclivity towards anxiety (e.g., instability and strain reactions), and insecurity (e.g., questioning oneself and depression). Emotionally stable individuals have low levels of both. Individuals who have low levels of emotional stability lack the ability to psychologically adjust readily and tend to be emotionally volatile.

Figure 1: The Mediating Effects of Felt Accountability on the Relationship Between Personality Dimensions and Job Satisfaction
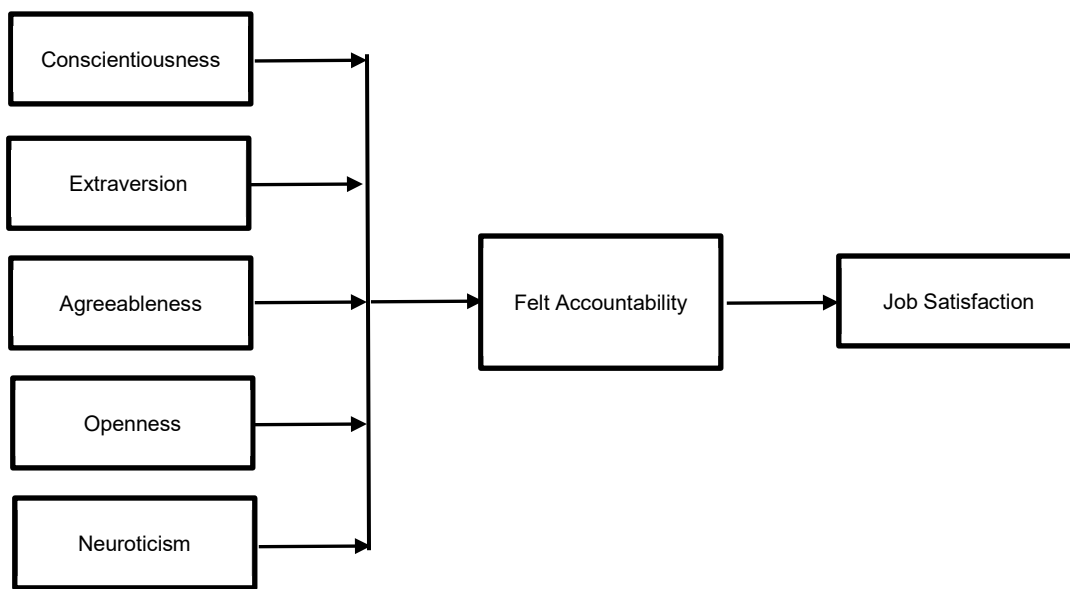


*This is the model of individuals' trait-like dispositional characteristics predicts felt accountability and individuals' levels of job satisfaction. The proposed model contends that personality dimensions differentially predict job satisfaction, but that satisfaction also occurs as a consequence of feeling answerable for one's work obligations.*

Costa and McCrae's (1992) conceptualization of neuroticism (i.e., the lack of emotional stability) has six correlated components: anxiety, hostility, depression, self-consciousness, vulnerability, and impulsiveness. Emotionally unstable individuals are prone to experiencing troubling emotions (e.g., anxiety, fear, depression and irritability) in circumstances and at magnitudes that others would not. Furthermore, this emotional distress often precipitates physical symptoms (e.g., hypertension, alcoholism, migraine headaches, ulcers and erectile dysfunction, etc.) (Heldon, 2003; Schermerhorn, et al., 2008). Concomitantly, emotionally unstable individuals experience lasting, pervasive, negative moods (Suls, Green, & Hills, 1998).

With respect to neuroticism, the current research employs the positive organizational behaviorist perspective (e.g., Luthans, 2002). It measures emotional stability. To that end, the researcher measured the extent to which respondents are comfortable, secure, open to positive interaction with others and deliberate in their actions. In other words, the measure of emotional stability used in this research runs counter to neuroticism. Research indicated that emotionally stable individuals are likely to feel relaxed, collegial, and satisfied with their work (Judge et al., 1998). As noted by Hall et al (2003), accountability

can be an environmental stressor because it entails that individuals be observed, judged and possibly called to defend their behaviors based on set of either explicit or implicit expectations.  As such, it is likely that emotionally stable individuals are more apt to feel accountable because it is not as straining to them.  Concomitantly, if they feel accountable (and behave accordingly), they are likely to feel satisfied in their work due to positive evaluations they get from others for their actions.  Expressed the other way, neurotic individuals are likely to avoid feeling accountable due to perceived excessive strain so their subsequent (potentially withdrawing or unethical) behaviors would alienate them from other employees, thus, diminishing levels of job satisfaction.  Therefore:

> *Hypothesis 5: Felt accountability mediates the relationship between emotional stability and job satisfaction.*

## DATA AND METHODOLOGY

This research proposes the relationship between personality dimensions and job satisfaction is mediated by felt accountability.  To that end, the researcher attempted to determine if the variance in job satisfaction is caused independently by the predictor variables (i.e., the Big Five personality dimensions and felt accountability), or if a causal chain of events exists.

Participants and Procedures

The author collected the data for this research in 2015, drawing on students in organizational behavior, career development and human resource management classes.  The researcher gathered his information from three different classes.  Two of these classes (i.e., one course in human resource management and one in career development) were taught face-to-face.  The other course in organizational behavior was taught online. Students received extra credit for participating.  They came only from these courses and no other instructor collected these data.  The researcher set specific criteria for eligible respondents: they must be full-time working adults with at least three years of experience. Students were allowed to complete surveys for themselves only if they met those requirements.  Typically students did not meet the specifications and enlisted the support of others who did. Often, these respondents were friends or family members.  The researcher gathered responses and ran the preliminary analyses using Qualtrics online analytic software.  Preliminary analyses indicated that of the 106 different students enrolled in these three class, 69 of them either participated directly by answering a survey or recruited others on their behalves.

To do this, the researcher generated a web address and sent it to students to disseminate to research confederates.  Of course not all students elected to participate in the data collection effort, ostensibly, because they either did not need extra credit or they lacked interest in the study's aims.  The researcher acquired the names, addresses (both mailing and IP), contact phone numbers and places of employment for all subjects.  He did this in order to help eliminate any ineligible submissions from students seeking to obtain extra credit who did not meet the criteria.  He also reserved the right to contact respondents if he suspected that submissions were not completed in good faith or required additional information.  379 individuals started the survey.  Of those, 303 (80%) submitted their responses.  Only four of those 303 were incomplete.  The author "list-wise" deleted those responses in the analyses.  As such, the final, usable, sample size was 299.  There were 182 female respondents (61%).  The average respondent age was 37.  The average respondent's organizational tenure was 7.4 years.  By way of occupations, the sample included nurses, project managers, bankers, self-employed entrepreneurs and sales professionals.

Measures

To ensure the appropriateness of the scales used in this study, the researcher conducted confirmatory factor analysis (CFA), before reporting any results.  The data were subjected to principal component

analysis with an orthogonal (Varimax) rotation.  He then applied Kaiser's Rule (i.e., retaining factors with eigenvalues over one), to estimate the amount of variance extracted in the construct by the principal factor (Pallant, 2004; Kaiser, 1974).  In general, the value of that first factor should exceed 1.0 with other eigenvalues remaining relatively week (Pallant, 2004; Kaiser, 1974).  These analyses confirmed the predicted factor structures, thus, no items were deleted from any scale in this research.  Appendix 1 lists the results of the factor analyses, the amount of variance extracted by the first factor, the coefficient alpha values of the scales, as well as the names of the authors who created them.

*Personality.* This research employed Goldberg's (1992) scales to measure the "Big-5" personality dimensions.  It measures each of five aspects of personality (i.e., conscientiousness, extraversion, openness, emotional stability, and agreeableness) using nine-item scales.  Typical items include, "I am always prepared," for conscientiousness; "I feel comfortable around other people," for extraversion; "I have a vivid imagination," for openness; "I am relaxed most of the time," for emotional stability and "I sympathize with others' feelings" for agreeableness.

*Job Satisfaction*.  This researcher measured job satisfaction using a five-item scale developed by Judge, Locke, Durham and Kluger (1998).  The scale employs a five-point response format (1 = *strongly disagree* to 5 = *strongly agree*).  Representative items include, "I feel real enjoyment in my work" and "most days I am enthusiastic about my work."

*Felt accountability*.  This research used an eight item measure created by Hochwarter, Perrewé, Hall, and Ferris (2005).  It employs a five-point response format (1 = strongly disagree to 5 = strongly agree).  Representative items include, "I am held very accountable for my actions at work and co-workers, subordinates and supervisors closely scrutinize my efforts at work" and "the jobs of many people at work depend on my success or failure."

*Control variables*.  In order to help minimize the potentially spurious effects of demographic differences, the researcher applied control variables. Accordingly he controlled for, age, gender, race and organizational tenure given their previously demonstrated influences (Sheridan & Vredenburgh, 1978).

**RESULTS AND DISCUSSION**

In order to test for mediation, this study used Baron and Kenny's (1986) three-step regression procedure.  In the first step, the independent variable must be significantly related to the mediator variable (i.e., felt accountability regressed on the personality factors and control variables).  In the second step, the independent variable must be related to the dependent variable (i.e., job satisfaction regressed on the five personality factors and controls).  In the final step, the mediating variable should be related to the dependent variable with the independent variable included in the equation (i.e., felt accountability added back into the regression equation).  If the three conditions hold, at least partial mediation occurs.  If the beta-weight of the independent variable (i.e., personality) becomes non-significant in the third step but the mediator (i.e., felt accountability) remains significant, then full mediation occurs.  If the beta-weight of the independent variable remains significant but diminishes (particularly when the significance level drops) in the third step but the mediator remains significant as well, then the relationship is partially mediated.

Table 1 provides the means, standard deviations and correlations among study variables.  The two largest correlations between variables in this sample are between two controls- age and organization tenure (r = 0.63, *p* < 0.01) and agreeableness and job satisfaction (r = 0.65, *p* < 0.01).  It is not surprising that age and organizational tenure correlate highly (e.g., Sheridan & Vredenburgh, 1978).  However, the strength of association between agreeableness and job satisfaction might be problematic.  This correlation indicates a potential problem of multicollinearity because it exceeds the 0.60 benchmark noted by Cohen, Cohen,

West and Aiken (2003). However, the analyses will go forward because it is plausible that those who are very cheerful and good-natured are likely to enjoy their jobs (and most everything else). No control variable was significantly related to either felt accountability or job satisfaction.

Table 1: Means, Standard Deviations, and Correlations between Study Variables

| Variable | M | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Age | 36.51 | 13.42 | --- | | | | | | | | | | |
| 2. Gender | --- | --- | **-0.12** | --- | | | | | | | | | |
| 3. Ethnicity | --- | --- | **-0.19** | 0.08 | --- | | | | | | | | |
| 4. Tenure | 7.37 | 8.02 | **0.63** | -0.06 | **-0.19** | --- | | | | | | | |
| 5. Job Satisfaction | 3.17 | 0.94 | -0.06 | 0.07 | -0.00 | -0.04 | --- | | | | | | |
| 6. Felt Account | 3.75 | 1.07 | -0.07 | -0.04 | -0.09 | 0.01 | **0.28** | --- | | | | | |
| 7. Conscientious | 3.35 | 0.91 | -0.02 | 0.07 | 0.07 | -0.09 | **0.36** | **0.29** | --- | | | | |
| 8. Extraversion | 3.08 | 0.99 | -0.06 | 0.05 | **0.20** | -0.05 | **0.32** | 0.01 | **0.42** | --- | | | |
| 9. Agreeableness | 2.86 | 0.91 | -0.08 | 0.07 | 0.07 | -0.05 | **0.65** | **0.24** | **0.58** | **0.64** | --- | | |
| 10. Openness | 2.94 | 0.88 | 0.01 | 0.08 | 0.07 | 0.10 | **0.18** | **0.16** | **0.32** | **0.34** | **0.38** | --- | |
| 11. Emo Stability | 2.72 | 0.95 | -0.06 | 0.08 | 0.05 | -0.06 | **0.27** | **0.14** | **0.52** | **0.45** | **0.47** | **0.31** | --- |

*All bolded correlations indicate significance levels of p < 0.05 or stronger (2-tailed). N = 299*

The first panel in Table 2 provides the results for the first step which indicates that the mediating variable, felt accountability, was significantly negatively related to conscientiousness ($b = 0.31$, $p < 0.001$). As such, it is legitimate to proceed to the second step. The second panel provides the results for this step and shows that conscientiousness is significantly related to the dependent variable (i.e., job satisfaction) ($b = 0.37$, $p < 0.001$). Conscientiousness explained 12% of the variance in job satisfaction. Step three of Baron and Kenny's (1986) procedure, requires that the mediating variable (i.e., felt accountability) must relate to the dependent variable (i.e., job satisfaction) with the independent variables included in the equation. The third panel in Table 3 provides the results of the final step. Results indicated that felt accountability was a significant predictor ($b = 0.20$, $p < 0.001$) of job satisfaction, but that conscientiousness was also still significant ($b = 0.13$, $p < 0.05$). Had the standardized beta weight for conscientiousness become insignificant in the third step, felt accountability would fully mediate the relationship (Baron & Kenny, 1986). However, a decline in the significance of the standardized beta weight of an independent variable between steps two and three with the mediator included in the regression equation indicates a case of partial mediation. Thus, analysis indicated that felt accountability partially mediated the relationship between conscientiousness and job satisfaction.

The estimated regression equation for the conscientiousness-felt accountability-job satisfaction relationship is as follows:

$$Job\ Satisfaction = \beta_1(Age) + \beta_2(Gender) + \beta_3(Org.tenure) + \beta_4(Ethnicity) + \beta_5(Conscientiousness) + \beta_6(Felt\ Accountability) \tag{1}$$

Table 2: Mediation Results for Conscientiousness

| Step 1: Mediator Variable Regressed on the Independent Variable | | | | |
|---|---|---|---|---|
| **Variable** | **F** | **df** | **Adjusted R$^2$** | **β (Standard)** |
| Mediator: Felt Accountability | 7.51*** | 5 | 0.10 | |
| Conscientiousness | | | | 0.31*** |
| **Step 2: Dependent Variable Regressed on Independent Variable** | | | | |
| Dep. Var.: Job Satisfaction | 9.10*** | 5 | 0.12 | |
| Conscientiousness | | | | 0.37*** |
| **Step 3: Dependent Variable Regressed on Mediator (IAFO) with the Independent Variable Included** | | | | |
| Dep. Var.: Job Satisfaction | 9.59*** | 6 | 0.15 | |
| Felt Accountability | | | | 0.20*** |
| Conscientiousness | | | | 0. 13* |

*The panels of this table show the mediation steps suggested by Baron and Kenny (1986). The results suggest that if the relationship between conscientiousness weakens but remains significant in the presence of felt accountability, partial mediation occurs. Significance levels are indicated as follows: †p < 0.10, \*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001. All results include age, gender, tenure, and ethnicity as control variables.* N=299

Table 3 provides the results for the study's second test hypothesis. It indicated that the mediating variable, felt accountability, is not significantly related to extraversion ($b = 0.03$, $p <$ N/S). Thus, no further calculations are warranted.

The estimated regression equation for the extraversion-felt accountability-job satisfaction relationship is as follows:

$$Job\ Satisfaction = \ \beta_1(Age) + \beta_2\ (Gender) + \beta_3(Org.tenure) + \beta_4(Ethnicity) + \beta_5\ (Extraversion) + \beta_6\ (Felt\ Accountability) \qquad (2)$$

Table 3: Mediation Results for Needs for Extraversion

| Step 1: Mediator Variable Regressed on the Independent Variable | | | | |
|---|---|---|---|---|
| **Variable** | **F** | **df** | **Adjusted R$^2$** | **β (Standard)** |
| Mediator: Felt Accountability | 1.47 | 5 | 0.01 | |
| Extraversion | | | | 0.03 N/S |

*The panels of this table show the mediation steps suggested by Baron and Kenny (1986). The results suggest no mediated relationship between extraversion, felt accountability, job satisfaction exists. Significance levels are indicated as follows: †p < 0.10, \*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001. All results include age, gender, tenure, and race as control variables.* No further steps necessary. N=299

Table 4 provides information for the study's third hypothesis. It indicated that the mediating variable, felt accountability, is significantly positively related to agreeableness ($b = 0.25$, $p < 0.001$). The table's second panel indicated that agreeableness also significantly predicted dependent variable (job satisfaction) ($b = 0.66$, $p < 0.001$). Agreeableness accounted for 42% of the variance in job satisfaction.

In the third step, the mediating variable (i.e., felt accountability) was still related to the dependent variable (job satisfaction) with the agreeableness included in the equation. The third panel demonstrates that felt accountability still a significant predictor ($b = 0.13$, $p < 0.01$) of job satisfaction, but that agreeableness still remained significant ($b = 0.62$, $p < 0.001$) with felt accountability entered in the equation. In between the second and third steps, the independent variable's standardized beta weight drops along with its significance levels, thus, felt accountability partially mediated the relationship between needs for openness and job satisfaction.

The estimated regression equation for the agreeableness-felt accountability-job satisfaction relationship is as follows:

$$Job\ Satisfaction = \beta_1(Age) + \beta_2(Gender) + \beta_3(Org.tenure) + \beta_4(Ethnicity) + \beta_5(Agreeableness) + \beta_6(Felt\ Accountability) \tag{3}$$

Table 4: Mediation Results for Agreeableness

| **Step 1: Mediator Variable Regressed on the Independent Variable** | | | | |
|---|---|---|---|---|
| **Variable** | **F** | **df** | **Adjusted R$^2$** | **β (Standard)** |
| Mediator: Felt Accountability | 5.18*** | 5 | 0.07 | |
| Agreeableness | | | | 0.25*** |
| **Step 2: Dependent Variable Regressed on Independent Variable** | | | | |
| Dep. Var.: Job Satisfaction | 42.01*** | 5 | 0.42 | |
| Agreeableness | | | | 0.37*** |
| **Step 3: Dependent Variable Regressed on Mediator (IAFO) with the Independent Variable Included** | | | | |
| Dep. Var.: Job Satisfaction | 9.59*** | 6 | 0.44 | |
| Felt Accountability | | | | 0.62*** |
| Agreeableness | | | | 0. 13* |

*The panels of this table show the mediation steps suggested by Baron and Kenny (1986). The results suggest that if the relationship between agreeableness weakens but remains significant in the presence of felt accountability, partial mediation occurs. Significance levels are indicated as follows: †p < 0.10, \*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001. All results include age, gender, tenure, and ethnicity as control variables.* N=299

Table 5 provides information for the study's forth hypothesis. It indicated that the mediating variable, felt accountability, is significantly positively related to openness ($b = 0.16$, $p < 0.01$). The table's second panel indicated that openness also significantly, positively, related to the dependent variable (job satisfaction) ($b = 0.18$, $p < 0.01$). Openness explained 2% of the variance in job satisfaction.

In the third step, the mediating variable (i.e., felt accountability) was still related to the dependent variable (job satisfaction) with the independent variables included in the equation. The third panel demonstrates that felt accountability was a strong predictor ($b = 0.29$, $p < 0.001$) of job satisfaction, but that openness still remained significant ($b = 0.13$, $p < 0.05$) with felt accountability entered in the equation. In between the second and third steps, the independent variable's standardized beta weight drops along with its significance levels, thus, this relationship is partially mediated. Felt accountability partially mediated the relationship between needs for openness and job satisfaction.

The estimated regression equation for the openness-felt accountability-job satisfaction relationship is as follows:

$$Job\ Satisfaction = \beta_1(Age) + \beta_2(Gender) + \beta_3(Org.tenure) + \beta_4(Ethnicity) + \beta_5(Openness) + \beta_6(Felt\ Accountability) \tag{4}$$

Table 5: Mediation Results for Openness

| Step 1: Mediator Variable Regressed on the Independent Variable | | | | |
|---|---|---|---|---|
| **Variable** | **F** | **df** | **Adjusted R²** | **β (Standard)** |
| Mediator: Felt Accountability | 2.48* | 5 | 0.03 | |
| Openness | | | | 0.16** |
| **Step 2: Dependent Variable Regressed on Independent Variable** | | | | |
| Dep. Var.: Job Satisfaction | 2.27* | 5 | 0.02 | |
| Openness | | | | 0.18** |
| **Step 3: Dependent Variable Regressed on Mediator (OBSE) with the Independent Variable Included** | | | | |
| Dep. Var.: Job Satisfaction | 6.40*** | 6 | 0.10 | |
| Felt Accountability | | | | 0.29*** |
| Openness | | | | 0.13* |

*The panels of this table show the mediation steps suggested by Baron and Kenny (1986). The results suggest that if the relationship between openness and job satisfactions weakens substantially but remains significant in the presence of felt accountability, partial mediation occurs. Significance levels are indicated as follows: †p < 0.10, \*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001. All results include age, gender, tenure, and race as control variables.* N=299

Table 6 provides information for the study's fifth hypothesis. It indicated that the mediator, felt accountability, is significantly related to emotional stability ($b = 0.13$, $p < 0.01$). The table 6's second panel noted that openness also significantly related to the dependent variable (job satisfaction) ($b = 0.26$, $p < 0.001$). Emotional stability explained 6% of the variance in job satisfaction.

In the third step, felt accountability was still related to the job satisfaction with the emotional stability (and controls) included in the equation. The third panel indicates that felt accountability was a strong predictor ($b = 0.27$, $p < 0.001$) of job satisfaction, but that emotional stability still remained significant ($b = 0.22$, $p < 0.001$) even with felt accountability in the equation. Because, between the second and third steps, the independent variable's standardized beta weight dropped, this relationship is partially mediated. Felt accountability partially mediated the relationship between needs for emotional stability and job satisfaction.

The estimated regression equation for the emotional stability-felt accountability-job satisfaction relationship is as follows:

(5)

$$Job\ Satisfaction = \ \beta_1(Age) + \beta_2\ (Gender) + \beta_3(Org.tenure) + \beta_4(Ethnicity) + \beta_5\ (Emotional\ Stability) + \beta_6\ (Felt\ Accountability)$$

Table 6: Mediation Results for Emotional Stability

| Step 1: Mediator Variable Regressed on the Independent Variable | | | | |
|---|---|---|---|---|
| **Variable** | **F** | **df** | **Adjusted R²** | **β (standard)** |
| Mediator: Felt Accountability | 2.15† | 5 | 0.02 | |
| Emotional Stability | | | | 0.13* |
| **Step 2: Dependent Variable Regressed on Independent Variable** | | | | |
| Dep. Var.: Job Satisfaction | 4.42*** | 5 | 0.06 | |
| Emotional Stability | | | | 0.26*** |
| **Step 3: Dependent Variable Regressed on Mediator (OBSE) with the Independent Variable Included** | | | | |
| Dep. Var.: Job Satisfaction | 7.71*** | 6 | 0.13 | |
| Felt Accountability | | | | 0.27*** |
| Emotional Stability | | | | 0.22*** |

*The panels of this table show the mediation steps suggested by Baron and Kenny (1986). The results suggest that if the relationship between emotional stability and job satisfactions weakens substantially but remains significant in the presence of felt accountability, partial mediation occurs. Significance levels are indicated as follows: †p < 0.10, \*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001. All results include age, gender, tenure, and race as control variables.* N=299

The hypotheses noted above, have with one exception (i.e., extraversion), all been partly validated. As such, a discussion of both theoretical and managerial implications of these findings is in order. For the purposes of this research, of the Big-Five dimensions, three (i.e., agreeableness, emotional stability and

conscientiousness) will be discussed relative to their implications for theory and the other two (i.e., extraversion and openness) will be covered in the section on managerial implications.

Theoretical Implications

This work helps broaden and develop the construct of felt accountability.  Heretofore, research has not investigated whether feeling answerable for one's own work attitudes and behaviors is driven by a personality trait in route to feeling more satisfied with one's job.  These findings indicated that, indeed, felt accountability promoted job satisfaction and had hereditary antecedent.  To this point, felt accountability has been somewhat limited to its demonstrated influence on promoting strain, constraining unethical behaviors and making better use of organizational resources (e.g., Hall et al., 2003; Simonson & Staw, 1992; Adelberg & Batson, 1978).   In essence, that couches accountability in a vein that is somewhat negative for individuals and positive for organizations.  These findings indicate that feeling answerable for ones work behaviors can be positive for both individuals and organizations.  Specifically, if accountable individuals' job satisfaction increases then they will likely perform those jobs better as well (Judge, Thoresen, Bono, & Patton, 2001).

These findings also augment the state of the personality literature by both reinforcing the field's assumptions current assumptions (e.g. Royle, 2016) that agreeable individuals are satisfied with their jobs when harmony prevails) and extending them by adding that felt accountability is partly responsible for that phenomenon.  Furthermore, these findings help reinforce, across contexts, Hair and Graziano's (2016) assertion that agreeableness is the most important personality dimension to consider when trying to describe the notion of the ideal or "ought" self.  In other words, agreeableness promotes feeling answerable because that is what most individuals believe they ought to do in order to be an ideal employee.

With respect to emotional stability, this research ties two findings together.  Feeling accountable can promote strain (Hall et al., 2003).  That strain is something neurotic individuals would find disagreeable and which would promote job dissatisfaction (Bolger & Zuckerman, 1995).  Consistent with Bolger and Zuckerman's (1995) contention, this research contends that emotionally stable employees, relative to others, experience both differential exposure and reactivity (i.e., they find fewer objectionable things/people in the environment and they react less severely if such things are present) when appraising whether or not to care about feeling answerable for their attitudes and behaviors at work.  Because feeling accountable is less straining to them, they embrace it because they feel they "ought" to (Hair & Graziano, 2016).  If they subsequently engage in behaviors that promote the organization's aims they both validated what they "ought" to do and it makes them to commendable others to whom they are accountable (Hall et al., 2003).  Under both circumstances, that promotes job satisfaction.

Prior research indicated that conscientiousness influences individuals' appraisals of, and reactions to, job stressors (Liu, Liu, Mills, & Fan, 2013; Gartland, O'Connor, & Lawton, 2012). Specifically, conscientiousness related positively to the secondary appraisal phase (i.e., the assessment of one's coping abilities in the face of stressors) (Lazarus, 1991; Gartland et al., 2012; Penley & Tomaka, 2002).  In other words, individuals felt more capable of coping if they were conscientious.  Furthermore, those high in conscientiousness demonstrated more intention—behavior consistency due to higher levels of goal-orientation and responsibility (Rhodes, Courneya, & Hayduk, 2002).  If individuals believe feeling accountable is straining (e.g., Hall et al., 2003) but they are goal oriented and responsible (i.e., conscientious), they are likely to embrace being answerable because they think they can cope appropriately and enhance their aggregate levels of job satisfaction by overcoming challenge stressors (i.e., a type stressor that is difficult but possible to overcome) and meeting their needs for competency (Cavanaugh et al., 2000).

Managerial Implications

The implications for managers are clear: measuring personality is still useful for HR decisions and is likely to remain so in the future (Crant, 2006; Royle, 2015). This research reinforces the utility of employee personality testing as practical tool for predicting individual's willingness to answer for their assignments and predicting the likelihood that they will be satisfied jobs. In short, managers should consider, when selecting applicants or reassigning current employees to other positions, the administration of personality tests. Furthermore, based on the relative strength of openness in these data (i.e., its intellectual component) tests of general mental are also advisable.

In this research, extraversion failed to predict felt accountability. Although the findings failed to validate hypothesis two, there are still some practical implications that might come from that lack of confirmation. Consider Hall and colleagues' (2003) contention that feeling accountable can mean evaluating oneself and taking a measure of how well one holds to one's own standards. In effect, this is a performance evaluation, albeit one done on oneself. DeYoung, Quilty and Peterson (2007) noted that extraversion has two components assertiveness and enthusiasm. Unfortunately, they noted also that those high on assertiveness also tend to demonstrate a lot of bias when evaluating performance. It is likely they do that with evaluations of themselves as well. It is possible they would claim to feel accountable when in fact they do not properly conceive of it. Bernardin, Thomason, Buckley and Kane (2016) reaffirmed this conclusion and added that even if enthusiasm (extraversion's jovial dimension) is added in and concurrently analyzed, bias is likely to occur for both those individuals very high and very low on extraversion. As such, measuring extraversion, particularly assertiveness, might still prove useful by informing managers which employees might be less likely to feel accountable.

The data in this study partially verified the predicted relationship between openness, felt accountability and job satisfaction. The most obvious implication for managers is the reaffirmation that openness is a desirable trait to have in employees because it has a direct effect on job satisfaction. Commensurate with contemporary research, these findings indicated that openness enhances individuals' satisfaction with work (and in life generally) (Schimmack, Oishi, Furr, & Funder, 2004; Judge et al., 1999). Furthermore, it appears to help validate findings that openness inclines individuals to educate themselves (McCrae & Costa, 1997; Hair & Graziano, 2016). Not only are open individuals given to learning things, they also enjoy it (Hair & Graziano, 2016). Managers might then rightly believe that employees high in openness, would be given to learning the things for which they are responsible and enjoying it. According to these data, it appears that they also feel answerable for what they learned because they are smart and found it enjoyable to master the components of their job descriptions.

Strengths, Weaknesses and Directions for Future Research

As with most research, this work has both strengths and limitations. To its credit, this paper attempts to address a common criticism of accountability research: namely, that it is collected in such a way as to a lack a sense of realism and, therefore, external validity (Frink & Klimoski, 1998, 2004). Frink and Kimoski (1998, 2004) accordingly, strongly urged researchers to study real employees in their actual daily working environments. The findings in this research are bolstered because they comes from a sample of working adults in actual organizations. Another attribute of this research is that it draws from a wide range of actual employees and occupations.

Gathering information on working adults also helps curtail other common criticisms about the kinds of subjects used in samples and the pressure to publish. The pressure to "publish or perish" often requires scholars to collect multiple data sets (Steelman, Hammer, & Limayem, 2014). Naturally, one practical, but potentially problematic, solution is to enlist students as study subjects (Steelman et al., 2014). Research indicates a fairly stable proportion of publications (i.e., between two thirds and three quarters) in social psychology are made up of student samples (Gordon, Slade, & Schmitt, 1986; Henrich, Heine, & Norenzayan, 2010). The inability to generalize results due to the potential that student samples are

meaningfully different from the population at large (i.e. the lack of ecological validity) makes the derived findings questionable (Campbell & Stanley, 1963). Indeed, these data are partly composed of student responses and some of those effects might persist. However, it was rare for students to be the actual survey respondents. Those students also had to be full-time working adults with at least three years of experience to participate. This helped alleviate threats to the ecological validity of the findings due to the sample.

One potential limitation to these findings occurs because these data came from a single source (i.e., self-reports on a single survey). This research did not estimate a common method variance (CMV) factor using structural equation modeling. It is, therefore, impossible to determine the extent to which CMV might have influenced these findings (Widman, 1985; Williams, Cote, & Buckley, 1989). Indeed, CMV is potentially problematic for the validity of this study. Table 1 indicates some potential for limitedly inflated relationships between study variables (Cohen et al., 2003). Although it is still possible that external artifacts generated some of the observed effects, based on the magnitude of the correlations, common method variance is not likely present (Cohen at al., 2003).

Another potential drawback of this research relates to its sampling procedure. Specifically, the researcher cannot rule out selection bias because students seeking extra credit might have relied too heavily on close associates and family members. They likely believed that these individuals would help them out as a personal favor. This introduces the possibility that these friends and family gave only a superficial treatment to the study's aims because they were only involved to appease the student soliciting their aid. As such, this is a convenience sample so generalizing these findings is tenuous.

A potentially fruitful avenue for future research would necessitate gathering a sample from a single organization of significant size. This would allow the researcher to attempt to replicate findings, investigate more boundary conditions and consider additional mediators. If such an organization's compliance could be secured, future studies should include job performance measures, specifically those using supervisor-subordinate dyads. For example, with respect to conscientiousness, it is likely that meeting competency needs (Cavanaugh et al., 2000) promotes job satisfaction. However, without having job performance data, it is impossible to be completely certain that good job performance does not cause the increase in job satisfaction (e.g., Judge et al., 2001). This research included no self-reports of job performance because of the potential for misreporting or the influence of a self-serving bias (i.e., that poor job evaluations are a result of supervisor bias as opposed to poor employee performance) (Ross, 1977). Furthermore, not all of the organizations in this sample would administer performance evaluations in the same way.

Future studies should also discuss boundary conditions related to personality that might affect the current findings. For example, further analysis of the differences in organizational culture and structure would be useful. A common consideration in cross-cultural research is the distinction between collectivistic v. individualistic cultures (Hofstede, 2001). In collectivist societies (e.g., most of Asia) maintaining harmony and putting the well-being of the group ahead of the individual is integral to social functioning. Individuals who do not do so risk being shunned or facing some other sanction (Gelfand, Niishi, & Raver, 2006). Triandis and Suh (2002) noted that agreeableness is of particular importance to cultures that heavily emphasize interpersonal harmony.

One might ask then, are agreeable individuals more inclined in a collectivist culture to feel accountable because they fear social discord more than Americans and believe being answerable promotes cohesion and, thus, job satisfaction? Would extraverts, who typically strive for status and leadership roles in groups (Barrick & Mount, 1991; Judge et al., 2002) be more likely in collectivist organizations/cultures to feel accountable than they did in this American sample because they are less inclined to signal their desires to assert themselves as leaders? Finally, if conscientious individuals feel answerable because of a

sense obligation and attention to detail, would collectivism predict that they do so, primarily, to promote the group and only then would they feel satisfied in their own jobs?

## CONCLUDING COMMENTS

The objective of this research was to examine the influence of felt accountability on the relationship between the Big Five personality traits and job satisfaction. Specifically, this research assessed the relative importance of feeling one should account for one's job-related attitudes and behaviors and its impact on satisfaction. The research results suggested that feeling answerable was partly responsible for the influence of personality dimensions on job satisfaction. The effects were consistently positive across four (i.e., conscientiousness, emotional stability, openness and agreeableness) of the Big-Five dimensions. The sample consisted of 299 respondents. These were full time working adults primarily from the Southeast United States (particularly Georgia, Florida and Tennessee). This was a convenience sample gathered with the help of students participating in an extra credit opportunity. Although students were not typically respondents, they recruited those known to them to have been working for at least three years at the equivalent of 40 hours per week. The researcher used mediated regression analysis to explain the intervening potential of felt accountability on personality and job satisfaction. The findings indicated that, although significant, the Big Five dimensions (with the exception of extraversion, which failed to prove significant) only partially mediated that relationship.

There are useful theoretical and managerial implications from this work to consider. For example, theory is expanded by demonstrating that felt accountability can function as a challenge stressor and, as such, actually promote job satisfaction if properly attended to and overcome. The primary managerial implications are straightforward: managers should still view the assessment of personality and general mental ability (i.e., the intellectual component of openness) as useful tools for HR decision-making (e.g., Crant, 2006; Royle, 2015).

Naturally limitations to these findings exist. No common method variance (CMV) factor using structural equation modeling was estimated in this research. Therefore, the researcher cannot determine the extent to which CMV might have tainted the results (Widman, 1985; Williams, Cote, & Buckley, 1989). The correlations between study variables also indicate some potential for limitedly inflated relationships between study variables (Cohen et al., 2003). Furthermore, the research could include some selection bias because students seeking extra credit might have implored friends and family for help and they might then have given only a cursory treatment to the studies aims as a way to appease students seeking their assistance quickly.

## APPENDIX

Appendix 1: Scales, Sources, Reliabilities, and Factor Analyses

| Variable Name | Scale Author | Coefficient $\alpha$ | Eigenvalue of the 1st Factor | Variance Explained by 1st Factor |
|---|---|---|---|---|
| Emotional Stability | Goldberg (1992) | 0.71 | 3.93 | 0.44 |
| Openness | Goldberg (1992) | 0.80 | 3.42 | 0.39 |
| Agreeableness | Goldberg (1992) | 0.91 | 3.57 | 0.40 |
| Extraversion | Goldberg (1992) | 0.83 | 4.67 | 0.52 |
| Conscientiousness | Goldberg (1992) | 0.80 | 3.50 | 0.39 |
| Job Satisfaction | Judge, Locke, Durham, & Kluger (1998) | 0.81 | 3.19 | 0.64 |
| Felt Accountability | Hochwarter, Perrewé Hall, & Ferris (2005) | 0.85 | 2.42 | 0.36 |

*The appendix identifies study variables, scale authors and measures. It reports coefficient alpha values for each scale, the Eigenvalue of the first factor and the amount of variance it extracted. All scales were measured with a five-point Likert-type scale anchored by "strongly disagree" and "strongly agree".*

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# THE INFLUENCE OF MANUFACTURER ATTITUDE, BRAND STRENGTH AND PROFITS ON DISTRIBUTORS' OVERALL SATISFACTION: EVIDENCE FROM BANGLADESH

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## ABSTRACT

*Distributors are agents of a manufacturer who supply products to other businesses that sell to end users or delivers products straight to end users. They play a significant role as a link between the manufacturer and its final consumers. A company's success or failure predominantly depends on its distributors' performance. Therefore, an important responsibility of a manufacturer is to invest heavily to support its distributors and make them highly satisfied. This research explores key factors that influence satisfaction of distributors in Fast Moving Consumer Goods industry of Bangladesh. Data was collected via structured questionnaire and analyzed using Statistical Package for the Social Sciences, version 20. We examine relationships among the constructs, which include Distributor's perception of Manufacturer's attitude, Strength of Manufacturer's brand and Distributor's current economic outcomes as independent variables or predictors and Distributor's overall satisfaction as the dependent variable. The results provide evidence to support the hypothesized relationship and provide useful information for firms in formulating strategies to satisfy its distributors thereby developing long-lasting and profitable relationships.*

**JEL:** C12, L60, M31

**KEYWORDS:** Distributors, Manufacturers, Fast Moving Consumer Goods Industry, Bangladesh

## INTRODUCTION

A company needs to market its products to two types of customers, end users and distributors. The fast-moving consumer goods (FMCG) industry of Bangladesh is often dominated by big local and international firms such as Partex Group, Square, ACI, Bashundhara Group, Unilever, GlaxoSmithKline, Reckitt Benckiser. These big manufacturers use distributors to make their products accessible to their final consumers. They use their channel of distribution structure to make offerings available in the market. Distributors and agents include wholesaler, Retailer, Reseller, Master distributor, Dealer and Value-added resellers. Undoubtedly these distributors play a vital role in achieving manufacturers' business objectives. Despite political instability and harsh economic conditions in Bangladesh, the FMCG industry grew almost 9% over the past few years. A manufacturer can conduct its business without any assistance from distributors, but may find it is an inconvenient and expensive way to conduct business. For this reason, both small and big companies use distributors to sell their products to the customers. Distributors perform duties to achieve business goals at a low-cost and easily for the manufacturer.

In today's competitive market, distributors can aid a manufacturer in achieving its business goals. The company needs to understand the importance of nurturing and continuing a profitable relationship with its distributors. This paper predicts the reasons that influence distributor's overall satisfaction. The Fast-Moving Consumer Goods (FMCG) industry is a very dominant industry for any country and Bangladesh is

no exception. Many local and foreign firms produce several products for consumers. Distributors work as a medium for these firms to make sure that products are available for consumers all corners of the country. A distributor also works as a helping hand for the manufacturer to satisfy the needs of final consumers. In FMCG industry, most frequently inventory of a manufacturer is managed by distributors (Lamming, et al. 2000). As a result, a manufacturer can focus more on production, marketing, and other strategies to reach their goals.

It is nearly impossible to survive in the market without the help of distributors. A manufacturer needs to understand the importance of distributors in reaching its business goals. The manufacturer must identify factors that can influence satisfaction of distributors and study those factors. A group of satisfied distributors is an extremely powerful tool in any company's arsenal (Rolnicki, 1998). If a company keeps its distributors satisfied, in turn, distributors will help a company to achieve its objectives. Nevertheless, few studies focus on distributor's satisfaction or factors that may influence distributor's satisfaction. This study aims to fill this gap.

The objective of the study is to identify the critical factors for distributors' overall satisfaction in FMCG industry of Bangladesh. We also identify the interrelationships between distributors' perception of manufacturer's attitude and distributors' current economic outcomes, and between the strength of manufacturer brands and distributors' current economic outcomes. This paper identifies major factors that can contribute to distributors' overall satisfaction. A theoretical model was developed by conducting a literature review. The structured questionnaire was developed for data collection and respondents from several distribution firms were selected. Analysis and finding are provided in the results section including some statistical analyses. The paper closes with some recommendations for managers of manufacturing companies, concluding comments, and suggestions for future research.

## LITERATURE REVIEW

Satisfaction is 'a positive affective state resulting from the appraisal of all aspects of a firm's working relationship with another firm' (Anderson and Narus, 1984). As noted earlier, distributors are regarded as a customer of the manufacturer and according to Saha (2016), satisfied customers are an asset to an organization. Most companies see their intermediaries as first line customers and partners (Sethuraman, et al. 1988). They practice strong partner relationship management (PRM) to forge a long-term partnership with channel members thereby creating a marketing system that meets the needs of both the company and its marketing partners. Manufacturers need to hold retailers' satisfaction in high regard to fortify their long-term success (Bolton, 1998, Selnes, 1998). The satisfied distributor is more loyal to the manufacturer and willing to make a commitment towards a long-lasting relationship. Distributors having a healthy relationship with a manufacturer consider themselves as partners in the manufacturer's success and are willing to protect prices, promote old and new products, and participate in mutual sales forecasting (Rolnicki, 1998). Distributors' overall satisfaction may be a multidimensional object, but attitude and strength of manufacturer's brands and economic outcomes of distributors are the most important factors (Iglesias and Vazquez 2001).

Distributors closely evaluate the attitude of a manufacturer towards them. The relationship between the supplier's attitude (as perceived by the distributor) and the distributor satisfaction seems clear. The more positive the attitudes are, the greater the distributor's satisfaction (Iglesias and Vazquez 2001). Manufacturer flexibility is an important factor when negotiating in a bargaining process. Many manufacturers are extremely rigid in describing duties and responsibilities for distributors. Others are exceptionally flexible and consider the needs of distributors (Venugopal, 2001). Andaleeb (1996) found climate of the distribution channel (a construct that includes the leader's contemplation towards the other firms) has a positive influence on satisfying the channel members.

A key factor in sustaining a profitable relationship between a manufacturer and distributors is to cooperate with distributors. The manufacturer should consider distributors as partners, rather than a business that works for them (Rolnicki, 1998). A manufacturer that partners with the distributors to understand their business, their customer, and the customer needs can play a critical role in helping the distributor increase their business and market share (Iglesias and Vazquez 2001). A manufacturer needs to convey all information to distributors honestly and accurately even it's painful (Rolnicki 1998). A manufacturer also needs to show interest in distributor's well-being by communicating regularly and solve any conflict that arises. It's difficult for a well-managed firm to perform successfully in the long run without regularly reviewing the performance of its channel members. Success of the firm in meeting objectives is dependent on how well the channel members perform (Li and Dant, 1997). A manufacturer should help its distributors perform well to meet its own objectives. The manufacturer should provide easy payment terms for the distributors. Distributors frequently favor those manufacturers that have above-average payment policies (Rolnicki, 1998).

> *H1a: Distributor's perception of manufacturer's attitudes is positively related to distributor's overall satisfaction.*

> *H1a0: Distributor's perception of manufacturer's attitudes is not related to distributor's overall satisfaction.*

Prestigious brands of a manufacturer can help its distributors gain more sales because it has demand in the market as well as a loyal consumer base. Manufacturers with weak brands are less able to rely on market demand, and, thus, often use deals to obtain retailer cooperation (Manning, et al. 1998). Distributors also perceive weak brands from the manufacturer as a hindrance to their path of obtaining significant sales. Strong brands can generate loyal customers which give a manufacturer sustainable and distinct advantage over its competition (Srivastava and Shocker, 1991). A sizeable base of loyal customers assists the manufacturer in selling their products quickly and easily. Every distributor loves a manufacturer who has a couple of brands with a powerful brand image because it has high demand in the market which will help it sell quickly and generate good cash flow (Smith, et al. 1997).

The axiom "we are known by the brands we keep" is applicable here. Distributors do not need to keep strong brands in their warehouse for a long time since they are easy to sell. Because of high demand, these products sell easily and generate cash and profits quickly for distributors (Rolnicki, 1998). This increases distributors' satisfaction. Strong and powerful brands are good sources for the manufacturer to exercise more power over its distributors. Distributors prefer strong brands which increase their dependence on a manufacturer. This in turns expands the manufacturer's power in a manufacturer-distributor relationship. This situation suggests lower distributor involvement in the decision-making process, which minimizes distributor satisfaction (Goaill, et al., 2013).

> *H2a: Strength of manufacturer's brands is positively related to distributor's overall satisfaction.*

> *H2a0: Strength of manufacturer's brands is not related to distributor's overall satisfaction.*

Every business wants to make a profit to survive in the marketplace. Distributors are usually small or medium size businesses. They want to make a profit to survive and flourish in the market (Rolnicki, 1998). Research suggests that there is a link between economic outcomes obtained by distributors and the degree of satisfaction (Geyskens, et al. 1999). The first thing a distributor asks a manufacturer is, "How much money am I going to make with your product line?" (Rolnicki, 1998). Geyskens and Steenkamp (2000) defined retailer's economic satisfaction as "the retailer's evaluation of the economic results that stem from its relationship with the supplier". Distributors usually refer economic outcomes as rewards; such as higher sales volume, elevated profit margin, superior discounts/margins etc received as a result of a positive

relationship with the manufacturer (Venugopal, 2001). A good relationship with the manufacturer helps a distributor get the most powerful brands which in turns provides the distributor with greater sales volume.

> H3a: Distributor's current economic outcome is positively related to distributor's overall satisfaction.

> H3a0: Distributor's current economic outcome is not related to distributor's overall satisfaction.

Theoretical Framework

Hypotheses are formulated based on the literature review to build a conceptual model for the research. Figure 1 shows that, apart from the causal relationships mentioned, the model includes relationships between the manufacturer's attitudes and distributor's current economic outcomes, and between manufacturer's brand strength and distributor's current economic outcomes. These relationships can arise from the dependence of both variables on certain characteristics of the manufacturers such as their resources, capabilities, and size.

Figure 1: Conceptual Framework of This Study
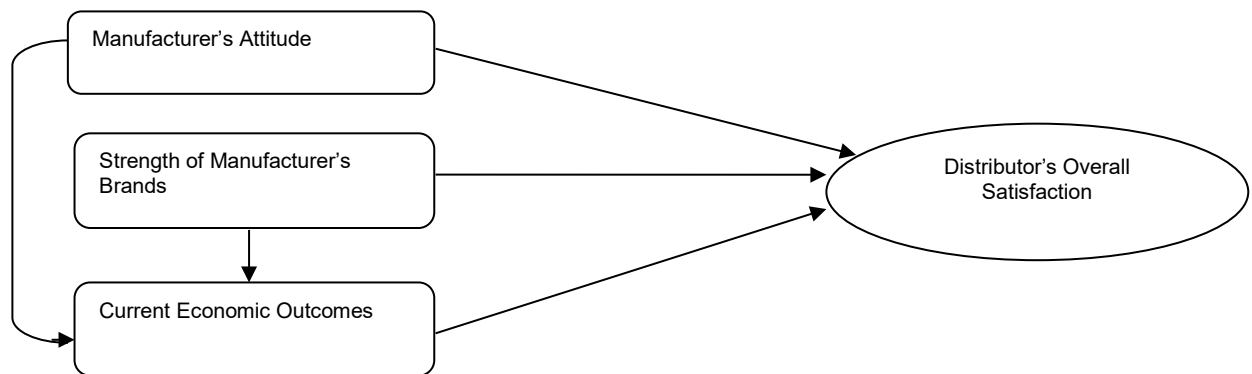


## DATA AND METHODOLOGY

In this study, a formal research design was followed. The study required a structured and precise way to show the relationship between different variables and to test hypotheses. The data collection method consisted of performing a face-to-face interviews with the managers of a myriad of distribution companies in the FMCG industry in Bangladesh. The survey questionnaire was designed and distributed to target respondents randomly. For the research to produce a realistic outcome, the collation of data was distributed over a large population. The survey was conducted on the entire objective population, i.e. 230 different types of distributors such as wholesalers, dealers, and resellers. If managers were absent, the questionnaire was given to the employee who fulfilled a similar role within the company (usually the general manager or supervisor who have purchasing power). The individual was to answer the questionnaire in its entirety, being the individuals with greatest knowledge and experience in negotiating with manufacturers. Each candidate selected a manufacturer with which the company had maintained a relationship for at least two years.

As shown in Figure 1, there are three independent variables and one dependent variable. So, a change in the independent variables will change the dependent variable. To investigate the research questions and test the hypothesis a Causal study is required. This study focuses on analyzing the factors responsible for a distributor's overall satisfaction. This study also explains the structure of a relationship between

independent and dependent variables. For this reason, this study can be considered causal or explanatory research. Explanatory research indicates a relationship between variables as well as the direction of the relationship. For this research, random sampling method was used. According to Teddlie and Yu (2007), Random sampling occurs when each sampling unit in a clearly defined population has an equal chance of being included in the sample. In this study, Dhaka city (Capitol city) was selected as the population and distributors were selected on a random sampling method. Respondents from several firms were approached in different parts of Dhaka city. The questionnaire and information was collected on the spot. Table 1 shows the designation of all respondents within their respective organizations. The data collection procedure took place during the months of February and March 2016.

Table 1: Respondents Profile

| Designation | Frequency | Percentage |
|---|---|---|
| General Manager | 25 | 12.14% |
| Manager | 67 | 32.52% |
| Supervisor | 114 | 55.34% |
| Total | 206 | 100% |

*This table shows the percentage and number of people for each position of the population from whom questionnaires were collected. The highest number of participants is from the supervisor level- 55.34% and lowest from general managers-12.14%. The rest are from the manager level-32.52%.*

A closed questionnaire consisting of 14 items was designed to collect feedback from the respondents. Appendix 1 provides an explanation of the items. For a better understanding of the participants, the questionnaire was also translated into native language (Bengali). If any interviewee had difficulties understanding any question, it was resolved promptly and politely. In total, 230 respondents were approached in the survey and 206 responses were collected and used for analysis. The response ratio was almost 90%. Nevertheless, it was necessary to eliminate 24 questionnaires from the sample for not having been correctly filled in or because they were incomplete for statistical analysis. The questionnaires were distributed by personally approaching the respondents in their offices.

## RESULTS

A total of 206 respondents were used in the analysis. Some 95.3% (198 participants) were male respondents and 4.7% (8 participants) were female respondents. Of the respondents who participated in the survey, 151 respondents (146 male, 5 female) were in the age range of 21 to 35 years; 43 respondents (40 male, 3 female) were in the age range of 36 to 50 years; 9 respondents (9 male, 0 female) were in the age range of 51 to 65 years; and 2 male respondents were above 65 years.

All accumulated data were analyzed using statistical software SPSS, version 20. Reliability findings (Cronbach's Alpha) of the multiple items were performed to measure the internal consistency. According to George (2003), reliability coefficient of 0.7 is acceptable, more than 0.8 is good and more than 0.9 is considered excellent. Table 2 shows that all constructs met the reliability test. Three of the variables have Alpha value in "good" range and one in "excellent" range.

Table 2: Reliability Analysis

| Dimensions | Number of Items | Cronbach's α |
|---|---|---|
| Distributor's perception of manufacturer's attitude | 3 | 0.873 |
| Strength of Manufacturer's brands | 4 | 0.902 |
| Distributor's current economic outcomes | 4 | 0.886 |
| Distributor's overall satisfaction | 3 | 0.893 |

*This table shows the values of Cronbach's Alpha (α). All variables have values more than 0.80, which indicates a high level of internal consistency for our scales with this specific sample. Two of the independent variables consisted of four items, one of the independent variables and the dependent variable consisted of three items.*

Pearson Correlation

A correlation coefficient is a useful way to summarize the relationship between two variables with a single number that falls between -1 and +1 (Welkowitz et al., 2006). Cohen and Lea (2004) stated that: -1.0 (a perfect negative correlation), 0 (no correlation), and +1.0 (a perfect positive correlation).   The correlation coefficient $r$ measures the strength and direction of a linear relationship between two variables on a scatterplot. The value of $r$ is always between +1 and –1. According to Taylor (1990), correlation $r$ is closest to: Exactly –1 A perfect downhill (negative) linear relationship, –0.70 A strong downhill (negative) linear relationship, –0.50 A moderate downhill (negative) relationship, –0.30 A weak downhill (negative) linear relationship, 0 No linear relationship, +0.30 A weak uphill (positive) linear relationship, +0.50 A moderate uphill (positive) relationship, +0.70 A strong uphill (positive) linear relationship, Exactly +1 A perfect uphill (positive) linear relationship.  We propose the following hypothesis based on correlation analysis.

> *H1a: Distributor's perception of manufacturer's attitudes is positively related to distributor's overall satisfaction.*

> *H1a0: Distributor's perception of manufacturer's attitudes is not related to distributor's overall satisfaction.*

Table 3 shows that the correlation (r) of Manufacturer's attitude is 0.82 and the significant level is 0.000 ($p \leq 0.05$). The table shows the p-value is 0.000, is less than 0.01. Therefore, the null hypothesis is rejected. We conclude there is a significant positive (r = 0.822) relationship between Distributor's perception of manufacturer's attitudes and distributor's overall satisfaction in FMCG industry in Bangladesh.

> *H2a: Strength of manufacturer's brands is positively related to distributor's overall satisfaction.*

> *H2a0: Strength of manufacturer's brands is not related to distributor's overall satisfaction.*

From Table 3, we observe that correlation (r) between the strength of manufacturer's brands is 0.863 and the significant level is 0.000 ($p \leq 0.05$). The table shows that the p-value is 0.000 so the null hypothesis is rejected.  We conclude that there is a significant positive (r =0.863) relationship between strength of manufacturer's brands and distributor's overall satisfaction in FMCG industry in Bangladesh.

> *H3a: Distributor's current economic outcome is positively related to distributor's overall satisfaction.*

> *H3a0: Distributor's current economic outcome is not related to distributor's overall satisfaction.*

Table 3 shows the strongest predictor of distributor's satisfaction is distributor's current economic outcomes. The result indicates that correlation (r) of the strength of manufacturer's brands is 0.870 and the significant level is 0.000 ($p \leq 0.05$). The results show a p-value is 0.000, so the null hypothesis is rejected. We concluded there exists a significant positive (r = 0.870) relationship between distributor's current economic outcome and distributor's overall satisfaction in FMCG industry in Bangladesh. Results also indicate that a significant positive interrelationship exists between the manufacturer's attitudes and distributor's current economic outcomes (r = 0.798 and significant level = 0.000), and between manufacturer's brand strength and distributor's current economic outcomes (r= 0.837 and significant level = 0.000). Overall, we find for all three correlations, the *r* value is greater than +0.70 which indicates the existence of a strong uphill (positive) relationship.

Table 3: Pearson Correlation Matrix

| | Distributor Satisfaction | Manufacturer's Attitude | Brands' Strength | Economic Outcomes | Sig. (2-Tailed) |
|---|---|---|---|---|---|
| Distributor Satisfaction | 1 | 0.822** | 0.863** | 0.870** | 0.000 |
| Manufacturer's Attitude | 0.822** | 1 | 0.805** | 0.798** | 0.000 |
| Brands' Strength | 0.863** | 0.805** | 1 | 0.837** | 0.000 |
| Economic Outcomes | 0.870** | 0.798** | 0.837** | 1 | 0.000 |

*Note: **. Correlation is significant at the 0.01 level (2-tailed) This table shows the results of Pearson Correlation. All r values are more than 0.70 which indicates a positive and uphill relationship between variables. ***, **, and * indicate significance at the 1, 5 and 10 percent levels respectively. All the P values (significance level) are also ≤ 0.05 which indicates rejection of the null hypotheses. The number of observations in each sample is the same as indicated in Table 1.*

Regression Analysis

Prior to conducting the regression analysis, we check for multicollinearity among explanatory variables. Multicollinearity or collinearity is the situation where two or more independent variables are highly correlated and can have damaging effects on the results of multiple regressions (Haitovsky, 1969). A correlation matrix is a powerful tool for getting a rough idea of the relationship between predictors (Kaur, 2015). The suggested rule of thumb is that, if the pair-wise or zero-order correlation coefficient between two regressors exceeds 0.8, then multicollinearity is a serious problem (Gujarati, 2009). The solution is to drop that variable and thereafter run the regression analysis with the remaining variables. Another way to check for multicollinearity is to compute the average variance inflation factor (VIF). As a rule of thumb, if the average VIF of a variable exceeds 10, which will happen if the correlation coefficient exceeds 0.80, then that variable is said to be highly collinear (Gujarati and Porter, 1999). All the values in the analysis, have VIF values that do not exceed 10. Therefore, we can conclude the data are free from multicollinearity problems. Moreover, the Durbin-Watson statistic was used to test the assumption of independent errors (autocorrelation). The value of this statistic between 2 or close to 2 is considered acceptable. Table 4 indicates the value is 1.867, which is very close to 2 (Gujarati and Porter, 1999). Therefore, the assumption is valid and the model is valid and reliable.

$$Y = \alpha + \beta_1(Manufacturer's\ Attitude) + \beta_2(Brand\ Strength) + \beta_3(Economic\ Outcomes)$$

$$Y = -0.176 + 0.214 + 0.276 + 0.316$$

Here Y is the distributor's overall satisfaction, and α, the constant. The results in Table 4 show that the combination of Distributor's perception of manufacturer's attitude, strength of manufacturer's brand and distributor's current economic outcomes together contributed 83.2% to the effect on distributor's overall satisfaction. The $R^2$ for the overall study on the three predictors suggests that there is a powerful effect of all three independent variables on distributor's overall satisfaction. From Table 4, we conclude that all three Independent variables have a significant effect on the dependent variable (p-value = 0.000). By analyzing

the beta values, it can be observed that distributor's current economic outcomes are most influential for distributor's overall satisfaction with 40.1%. Strength of manufacturer's brands and manufacturer's attitude explain 35% and 22% respectively.

Table 4: Multiple Regression Analysis Results

| | Unstandardized Coefficients | | Standardized Coefficients | T-Value | Significance | VIF |
|---|---|---|---|---|---|---|
| | B | SE | B | | | |
| Manufacturer's Attitude | 0.214 | 0.051 | 0.220 | 4.173 | 0.000** | 3.336 |
| Brands' Strength | 0.276 | 0.046 | 0.350 | 6.046 | 0.000** | 4.035 |
| Economic Outcomes | 0.316 | 0.045 | 0.401 | 7.026 | 0.000** | 3.907 |
| **Other Values** | | | | | | |
| Intercept (Constant) | 1.276 | | | | | |
| $R^2$ | 0.832 | | | | | |
| Adjusted $R^2$ | 0.829 | | | | | |
| Durbin-Watson | 1.867 | | | | | |

**Note:** **. Significant at 5 percent level  *This table shows the values for unstandardized and standardized coefficients which indicate how each independent variable is affecting the dependent variable. Variance Inflation Factor (VIF) values indicate the multicollinearity among explanatory independent variables. $R^2$ and Adjusted $R^2$ indicate how much the dependent variable is explained by all the independent variables together. The Durbin-Watson figure implies the model to be valid and reliable.*

Analysis of variance (ANNOVA) assesses the overall significance of the model (Hoaglin & Welsch, 1978). Table 5 shows the model is significant as the *P* value is <0.05. Table 5 also shows that all the independent variables have a positive impact on distributors' overall satisfaction. The coefficients of these variables are positive and significant at the 5 percent level, hence rejecting H1a0, H2a0, and H3a0.

Table 5: Analysis of Variance (ANNOVA) Results

| Sources of Variation | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Regression | 525.854 | 3 | 175.285 | 332.903 | 0.000** |
| Residual | 106.360 | 202 | 0.527 | | |
| Total | 632.214 | 205 | | | |

*This table shows the overall significance of the model. Here the F value and P value show that distributor satisfaction factors together are significantly related to the overall satisfaction of the distributors. The coefficients of these variables are positive and significant at the 5 percent level of significance.*

## CONCLUDING COMMENTS

The research was aimed to predict the factors influencing distributor's overall satisfaction in fast moving consumer goods (FMCG) industry in Bangladesh. A questionnaire survey was conducted to ascertain relevant distributor satisfaction research and theories. Data was collected from 206 respondents and analyzed using statistical software.

Only three predictors were chosen to construct the research framework. Items included for Distributor's perception of manufacturer's attitude were, strength of manufacturer's brands and distributor's current economic outcomes. The study indicates that all the factors predominantly affect Distributor's overall satisfaction in FMCG industry in Bangladesh.

It is pertinent that mangers in the FMCG industry keep their distribution channel strong and productive to make products available to the customer base. One crucial responsibility of a distribution manager is to make channel members satisfied to build a long-lasting and profitable relationship. Many factors can influence distributor's overall satisfaction level. These factors have been previously identified by researchers. But distributor's perception of manufacturer's attitude, strength of manufacturer's brands and distributor's current economic outcomes play the most vital roles. This research provides solid evidence to support it.

It is evident in the research that distributor's current economic outcomes are the most influential predictor. This finding is not a surprise because distributors are also businesses, and every business wants to make a profit. It is also evident that manufacturer's attitude and strength of manufacturer's brands can substantially influence distributor's current economic outcomes. For this reason, the distribution manager should be careful about selecting the best quality distributors. Moreover, they should entice those distributors by offering them inducements to start a fruitful relationship. Managers should also communicate with the distributors to make sure the right information is flowing among them and always involve distributors in the decision-making process. These efforts demonstrate a positive attitude towards distributors. A manager should also consult with other departmental managers to find ways to make the image of brands stronger in the market. Every distributor loves a powerful brand as it is easy to sell, products move through the channel faster, and cash and profits are generated more easily. In this way, a manager can fortify distributors' satisfaction. The result of this study has proven the research model framework is a very effective model to measure distributor's overall satisfaction in the FMCG industry of Bangladesh.

Some limitations of this research must be addressed. First, the size of the current sample is modest. Although appropriate analysis procedures are used and the results are robust, it would be desirable to replicate our findings with a larger sample. Secondly, the study consisted of a single industry. Further research could analyze the effects of predictors by considering different industry or all the industries together. Finally, additional insight could be gained by further expanding the unit of analysis in relationship research. For example, the analysis could be broadened to include the relationship between manufacturer and distributor, and commitment and loyalty of distributors to manufacturers. Doing so, may in turn reveal different types satisfaction predictors. Future studies should continue to expand the unit of analysis in relationship research and consider even more complex factors.

## APPENDIX

Appendix 1: Description of Scales

**Distributor's perception of manufacturer's attitudes**
Item 1: Manufacturer's positive attitude
Item 2: Manufacturer's interest in satisfying distributors
Item 3: Easy payment terms

**Strength of manufacturer's brands**
Item 4: Popular brands
Item 5: High market share
Item 6: Loyal customer base
Item 7: Easy to sell

**Distributor's current economic outcomes**
Item 8: High volume of sales
Item 9: Gain more customers via good relationship
Item 10: Gain more profits via good relationship

Item 11: Adequate profits from manufacturer's products

**Distributor's overall satisfaction**
Item 12: Highly satisfied
Item 13: Manufacturer tries to keep distributors satisfied
Item 14: Recommendation for manufacturer to other distributors

Note: Questions were rated on the following 5-point Likert scale: strongly disagree, disagree, neither agree nor disagree, agree, strongly agree.

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# CONSUMERS' EXPECTATIONS OF SALES EVENTS: HOW SATISFIED ARE CONSUMER WITH SHOPPING DURING SALES EVENTS?

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## ABSTRACT

*Past researchers have examined the influence of sales events on multitude of variables. However, there exists a gap with regards to specific examination of the influence of sales events on consumer participation in sales events and their expectations from the sales events. In this study, we examine the relationship between consumers' participation in a given sales event and their expectations of savings from that event in North American context. Research findings indicate that only 11 sales events have a high realization rate of expected savings. Based on research findings, we proffer several recommendations for the retail managers.*

**JEL:** M31, M10

**KEYWORDS:** Sale Events, Consumer Participation, Expectation of Savings, Realization Rate of Expected Savings

## INTRODUCTION

Sales events have become commonplace in the retail industry. Majority of retail stores regularly conduct special sales events such as white-goods sales, back-to-school sales, or 4th of July sales, etc. According to Ortmeyer (1991), over 60% of department stores' sales volume is sold at "sale" prices. Stores staging the event reduce the prices of certain products or the entire merchandise for a limited period of time and advertise these price reductions to their customers. The advertisement usually takes place in the form of a flier inserted in the local Sunday newspaper, a direct mail flier sent to the potential customers, or an email flier. In emerging economies, retailers offer discounts ranging from 30% to 80% on shoes, clothing and other fashion products during various sales events (Livemint, 2016). These events may also be promoted via radio, television, on-store banners or Internet. In general, the relationship between shopping and sales events has been an ignored area (Sands et al., 2009).

According to Drengner et al., (2008), an event is "a communication instrument whose purpose is to promote the interests of a company and its brands by associating the company with a specific activity." Main characteristics of events are offered on an intermittent or discrete basis (Sit et al., 2003) and are designed to attract customers through entertainment-oriented promotions (Close et al., 2009). Duncan and Hollander (1977, p. 464) state that three major objectives behind these sales events can be: 1) to raise money quickly regardless of their effect on future business (distress sales); 2) to sell slow-moving merchandise or to close out a line, brand, or department (turnover sales); and 3) to attract new customers, introduce new goods, or secure favorable publicity (promotion sales). Given the aforementioned objectives of the sales events, it may be important to understand consumers' perception of these events, the level of expected savings, and whether or not these expectations have been realized. This information

can be important for retailers in planning future sales events and forecasting revenue generated from these sales events.  For example:

*"A few years ago, a major discount store chain used sales promotions relatively infrequently. Its off-discount (baseline) sales were moderate, and consumer response to sales promotions was good. Observing the promotional response, the retailer decided to increase sales promotions, which led to a decrease in baseline sales. Believing that the additional sales promotions were successful, the retailer added even more. Eventually, the retailer started offering special promotions almost every week, and its management wondered why profitability was so low when the large incremental demand over the baseline indicated that the promotions were working so well. Why didn't the retailer's management recognize that the increase in sales promotions led to a decrease in baseline sales and that its pricing decisions were suboptimal? Many retailers have little understanding of how such estimates arise* (Levy et al., 2004, p. xv)."

The term perception used in this paper refers to the efforts an individual makes to "interpret" a given object. In this study, the perception of interest is the sales events.  Interpretation, in turn, refers to the *meaning* that a consumer will attach to a particular sales event.  We are particularly interested in the categorization and inferences made about a given sales event.  For example, consumers may categorize a "White Sale" as an event related to the sale of linens. Performance refers to the realization of savings that can be higher, equal to, or lower than consumers' expected savings.

Many factors influence the expected level of savings and consumers' belief that those potential savings will be realized.  For example, consumers' past purchase experience, pre-sales price level and consumers' shopping effort all may have an impact on the expected level of savings and their potential realization (Crespo-Almendros and Del Barrio-García, 2014).   Reference pricing also plays an important role in forming consumers' price perception. Previous studies on reference price advertisements have included perceived savings as dependent variable (Biswas and Blair, 1991). Reference pricing is used to emphasize savings and raise the consumers' perceptions of savings (ibid).

Literature on 'event' suggests that the customer's perception of an event influences more toward the retailers and also towards the event itself (Close et al., 2009; Sit et al., 2003). Previously, sales events have investigated from in-store event context in which positive relationship has been found between event's image and customer satisfaction (Leischnig et al., 2011). Despite the importance and ever increasing number of sales events, researchers have overlooked this fertile area of research (Close et al., 2009; Sands et al., 2009; Sit et al 2003; Parsons, 2003). The current study aims to fill this void in marketing literature.   In this study we provide supporting data to the hypothesis that consumers' participation in a given sales event depends on their perception of the event and based on their past experience whether or not their expected savings will be realized. Specifically, we investigate four research questions. First, what is the perception of consumers of a particular sales event? Second, what is the consumers' expected level of savings from a given sales event? Third, do potential consumers believe that their expected savings will be realized in a particular sales event? Fourth, what is the relationship between consumers' expected savings and the past "performance" of a given sales event? Table 1 depicts aforementioned key points and various possible outcomes i.e. desired performance, perceived performance, relative to expectation, satisfaction and dissatisfaction, etc.

The focus of the current study is on consumer intentions to participate in future sales based on their perceived value of the sales event. The paper is organized in the following manner. The subsequent section deals with extent literature review on sales events in shopping. Attention has then been given towards methods about the questionnaire, data and analysis procedures. In the next section, the results of data analysis have been presented. The paper ends with detailed discussion and implications of the study.

Table 1: Expectations, Performance, and Satisfaction/Dissatisfaction Expectation Level

| Relative to Expectation | Desired Performance |
|---|---|
| Perceived Performance | Above Minimum |
| Better | Satisfaction/ Commitment |
| Same | Satisfaction |
| Worse | Dissatisfaction |

*Table 1 summarizes expectations, performances and satisfaction/dissatisfaction expectation level of customers with regards to sale events.*

## LITERATURE REVIEW

In recent years, consumer sales promotions accounted for a large part of the marketing budget of many companies (Raghubir et al., 2004; Hardesty and Bearden, 2003; Folkes and Wheat, 1995). To stimulate trial, encourage purchase, or persuade brand switching, the companies offer a variety of consumer promotion tools such as coupons, free samples, discounted prices around calendar events, annual discount events, sweepstakes, premiums and membership rewards (Raghubir et al., 2004; Folkes and Wheat, 1995). Promotions do seem to have these effects (Blattberg and Neslin, 1989); however, companies also need to understand the psychological consequences of different types of promotions for the consumer (Folkes and Wheat, 1995). "The challenge is not simply bringing the customer in the door but also to retain these customers for future purchases (Reibstein, 2002)." Marketing managers may not be aware of effects of promotions on consumers' deal evaluations and purchase intentions (Raghubir et al., 2004).

Consumer sales promotions are intended to increase the consumer perceptions of value which can take several forms (Hardesty and Bearden, 2003). The way in which consumers evaluate and process promotions eventually affects their perceptions of promotional offer value Chen et al., 1998; Grewal et al., 1996). Monetary promotions satisfy consumers' desire for savings (Chen et al., 2012; Blattberg and Neslin, 1990). *Perceived savings* has been one of the most common methods of measuring *deal reaction* (Krishna et al., 2002). Considerable research in marketing has stated *regular price believability* as a critical aspect in forming consumers' perception of expected savings which further affects the purchase intentions (Campeau et al., 2002; Urbany et al., 1988). Also, a number of marketing researches have studied the effects of price framing and situation on perceived savings (Monroe, 1973; Winer, 1988). However, the extent to which expected savings from sales events influence the perceived promotional offer value has not been extensively considered by the previous researches.

Past research in the domain of sales events focuses primarily on the influence of sales events on consumer attitude towards product, attitude towards brand, brand recall and brand equity (Vidal and Ballester, 2005). However, the results of the previous research are mixed conflicted. One stream of research found positive association between sales promotion events and the aforementioned outcome variables (Yi and Yoo, 2011). Second stream of research found either no association between sales promotion events and aforementioned variables (Shrestha, 2012). Third stream of research found negative association between sales events and customer satisfaction. First stream of research found that sales events increase brand recall and product recall. However, second stream of research found that sales promotions are not an effective tool for brand building strategies and that the evidence shows that the long-term effects of sales promotions on brand attitude vary across deal types. Third stream of research suggests widespread dissatisfaction among consumers during sales events (Barbaro, 2006; Cline, 2005; Jones, 2006; Rozhon, 2004). Specifically, Simpson et al (2004) examined the shopping behavior of Black Friday consumers and found that nearly 25% of the consumers exhibited anxiety and 24% demonstrated irritability. Unfortunately, these negative emotions could result in potentially dangerous behaviors which pose a safety concern for store personnel and other shoppers. Nonetheless, most of the studies on sales events which are listed above have focused on sales reports which are neither academically based nor have been published in the academic literature.

Marketing textbooks and journals (mainly trade), without exception, have taken descriptive approaches to studying sales events. These sources usually define and discuss the role which sales promotion in general, and sales events in particular play in the marketers' promotion campaigns. An extensive literature review revealed no study demonstrating a link between the consumers' perceptions of sales events, in particular, and the effectiveness of these events in general. It must be added that there is extensive marketing literature related to price promotion and brand substitution; however, these studies have very little or no relevance to the current study. A retail store may advertise price reduction without associating it to a particular sales event. Consider, for example, advertising campaigns of grocery stores on weekends that announce the price reduction on selected items for the purpose of generating traffic to the store.

From a theoretical standpoint, the relationships examined in this research are predicated on the expectation-disconfirmation paradigm. This study examines the consumers' perception of sales events. We also argue that consumers' expectations will influence their post-purchase affective states. In other words, consumers' expectations from a sales event shall dictate his/her level of self-reported realization of the savings from the sales events. Table 2 summarizes brief review work of four main contributing studies in the area of sales events. Out of which, the focus of the first study by Crespo-Almendros and Del Barrio-García (2013) was on comparison side of online sales promotion types. Table 2 revealed that a study by Shrestha (2012) focuses on the consumers' perception towards sales promotion in fast moving consumer good (FMCG) sector. A study by Yi and Yoo (2011) summarizes those long-term effects of sales promotions on brand attitude across monetary and non-monetary promotions. Lastly, a study by Vidal and Ballester (2005) focuses on effect of sales promotion on consumer-based brand equity.

Table 2: Review of Studies Investigating Sales Events

| Citation | Focus | Outcome Variable | Type of Study | Result |
|---|---|---|---|---|
| Esmeralda Crespo – Almendros and Salvador Delbarrio –García, 2014 | Comparative Analysis by Online Sales-Promotion Types | Product and Brand Recall | Empirical | Sales event may generate both higher product and brand recall. Non- monetary online sales events generated a higher level of brand and product recall, while monetary online sales events generated a higher level of product recall. |
| Binod Shrestha, 2012 | Consumers' Responses to Sales Promotions of Fast Moving Consumer Goods | Quality benefits, price benefits, hedonic benefits | Empirical/ Exploratory | Sales promotions are not an effective tool for brand building strategies |
| Yi and Yoo, 2011 | Long-Term Effects of Sales Promotions on Brand Attitude Across Monetary and Non-Monetary Promotions | Attitude towards brand | Empirical | Evidence shows that the long-term effects of sales promotions on brand attitude vary across deal types. On-monetary sales promotion activities have more favorable effects on brand attitude than monetary promotions. |
| Vidal and Ballester 2005 | Sales promotions effects on consumer-based brand equity | Brand knowledge | Empirical | Monetary and non-monetary promotions are useful to create Brand-equity because of their positive effect on Furthermore, non-monetary promotions are more appropriate as a brand-building activity and that the product type exerts a moderator effect on the relationship between sales promotions and brand knowledge. |

*This table shows a brief review of literature on sales promotion*

## DATA AND METHOD

In order to prepare a list of sales events, a panel of 50 non-traditional (part-time) graduate students was asked to provide the names of sales events they can recall from memory. After eliminating duplicate names, the following 31 sales events (see Table 3) were selected for this study. Table 3 shows the name

of the events included in the present study. Sales events considered for present study are: *After Christmas Sale, Bankruptcy Sale, Memorial Day Sale, Mother's Day Sale, Christmas Sale, Out of Business Sale, George Washington Sale, St. Patrick Day Sale, Green Tag Sale, Summer Sale, Fire Sale, Tax Man Sale, Independence Day Sale, Two Day Sale, March Madness Sale, Valentine's Day Sale, Back to School Sale, Moon Light Madness Sale, Boss is on Vacation Sale, New Year Sale, Father's Day Sale, President Day Sale, Grand Opening Sale, Spring Sale, Groundhog Day Sale, Super Bowl Sale, Halloween Sale, Thanksgiving Sale, Labor Day Sale, Toy Mania Sale, White Sale.*

Table 3: Sales Events Included in the Study

| Sr. No. | Name of Sales Events | Sr. No. | Name of Sales Events |
|---|---|---|---|
| 1. | After Christmas Sale | 17. | Back to School Sale |
| 2. | Memorial Day Sale | 18. | Moon Light Madness Sale |
| 3. | Bankruptcy Sale[1] | 19. | Boss is on Vacation Sale |
| 4. | Mother's Day Sale | 20. | New Year Sale |
| 5. | Christmas Sale | 21. | Father's Day Sale |
| 6. | Out of Business Sale | 22. | President Day Sale |
| 7. | George Washington Sale | 23. | Grand Opening Sale |
| 8. | St. Patrick Day Sale | 24. | Spring Sale |
| 9. | Green Tag Sale | 25. | Groundhog Day Sale |
| 10. | Summer Sale | 26. | Super Bowl Sale |
| 11. | Fire Sale | 27. | Halloween Sale |
| 12 | Tax Man Sale | 28. | Thanksgiving Sale |
| 13. | Independence Day Sale | 29. | Labor Day Sale |
| 14. | Two Day Sale | 30. | Toy Mania Sale |
| 15. | March Madness Sale | 31. | White Sale |
| 16. | Valentine's Day Sale | | |

*This table shows the list sales events included in the study*

A two-page questionnaire along with a cover letter was mailed to one thousand randomly selected households in a mid-western town of the United States. A particular city was selected because it is considered to be very representative of Midwest values and culture and has been used in major sociological studies (Hoover, 1990). The period of data collection is from 10/1/2013 to 12/29/2013. First, the respondents were asked to indicate familiarity with any of the sales events listed in the questionnaire. The term "familiarity" was explained to the respondents in terms of a general knowledge of items being offered for sale. Second, respondents were asked whether they have purchased items in one of these events. Third, the respondents were asked to describe the product types they expected to be on sale for a given sales event. Fourth, respondents were asked to indicate the percentage of discount they expected to receive in these sales events. Finally, respondents were asked to make a judgment whether their actual savings were above, the same or below their perceived value. Respondents were limited to the primary shoppers in the household. Two hundred eighty-six (286) usable questionnaires were returned, a response rate of almost 29 percent.

**RESULTS**

Results indicated the sales events namely *Christmas, After Christmas, Grand Opening, Out-of-Business, Back-to-School, Father's Day, Mother's Day, Valentine's Day, Bankruptcy, Fire Sale, New Year, and White Sale* had more than 90% awareness among respondents. Higher awareness of the above sales events in part can be attributed to the title of the events. Respondents may have guessed the nature of the sales without having a clear notion of the merchandise being on sale. This is especially true for business distress sales (Bankruptcy, Out-of-Business, Fire, and Grand Opening Sales). As we will see in the following section, a majority of respondents did not specify a particular class of products for these events. Everything-in-store was a common description of the items being on sales for business distress sales. Research findings are summarized in Table 4.

Table 4: Summary of Research Findings

| Event | Awareness (%) | Participation (%) | Average Expected Discount (%) | Realization (%) |
|---|---|---|---|---|
| Two Day Sale | 22 | 10 | 20 | 25 |
| After Christmas Sale | 99 | 71 | 48 | 62 |
| Back-to-School Sale | 94 | 68 | 24 | 50 |
| Bankruptcy Sale | 95 | 23 | 56 | 10 |
| Boss is on Vacation Sale | 36 | 5 | 21 | 13 |
| Christmas Sale | 93 | 84 | 30 | 57 |
| Father's Day Sale | 83 | 54 | 20 | 55 |
| George Washington Sale | 35 | 20 | 20 | 10 |
| Grand Opening Sale | 95 | 83 | 30 | 74 |
| Green-Tag Sale | 30 | 29 | 21 | 20 |
| Groundhog Day Sale | 5 | 10 | 8 | 5 |
| Halloween Sale | 80 | 61 | 16 | 58 |
| Independence Day Sale | 68 | 26 | 20 | 70 |
| Labor Day Sale | 74 | 37 | 22 | 19 |
| March Madness Sale | 46 | 13 | 22 | 18 |
| Memorial Day Sale | 79 | 38 | 20 | 33 |
| Moonlight Madness Sale | 20 | 25 | 20 | 12 |
| Mother Day's Sale | 98 | 68 | 22 | 82 |
| New Year Sale | 98 | 61 | 30 | 59 |
| Out of Business Sale | 88 | 25 | 55 | 20 |
| President Day Sale | 44 | 24 | 19 | 33 |
| Spring Sale | 82 | 34 | 21 | 12 |
| St. Patrick's Day Sale | 38 | 7 | 14 | 18 |
| Summer Sale | 30 | 12 | 20 | 21 |
| Super Bowl Sale | 40 | 17 | 15 | 22 |
| Tax Man Sale | 62 | 15 | 23 | 21 |
| Thanksgiving Sale | 89 | 34 | 24 | 73 |
| Toy Mania Sale | 64 | 20 | 23 | 21 |
| Valentine's Day Sale | 92 | 51 | 20 | 21 |
| White Sale | 98 | 67 | 26 | 57 |
| **Average** | **65.90** | **36.40** | **24.33** | **35.03** |

*This table shows brief summary about awareness, participation, average expected discounts and realization in various sales events.*

Table 4 shows that eleven sales events had more than 50% participation rates. More than 80% of the respondents indicated that they have participated in these events. *Boss is on Vacation* and *St. Patrick's Day* had the lowest participation rates (5% and 7%, respectively). Eleven of the sales events that had more than 50% awareness rate also had corresponding higher participation rates. It is interesting to note that business distress events, without exception, had very high awareness rates but had very low participation rates. Comments from the margins of questionnaires indicated that respondents considered these events a business gimmick rather than genuine sales events.

Respondents expected, on average, to realize 21% reductions in price in 20 out of 31 sales events. We will elaborate on the significance of this finding in the discussion section of this paper. Business Distress sales and Grand Opening sales had the highest expectations of price reductions. For example, respondents expected to get 56% and 55% price reduction in Bankruptcy sales and Out of Business sales respectively. Qualitative comments from respondents related to distress sales indicated that respondents believed that business in distress is a "lost cause" and, therefore, any revenue generated from these events will exclusively benefit the retailer.

The sales events namely *After Christmas, Fourth of July, New Year, Back-to-School, Grand Opening, Thanksgiving, Christmas, Halloween, White Sale, Father's Day, Mother's Day* had more than 50% realization rates. All of the above sales events without exception also had higher awareness and participation rates. Our analysis of the data related to the types of products offered during sales indicates that, in general, respondents were consistent in identifying categories of goods being offered for sales in these events. The single exception to this statement is Grand Opening sales, whereby the most common

answer given to this event was "everything in the store."

With few exceptions, sales events do not conjure up a clear mental image in consumers' minds. In order to make some generalizations, we classified the sales events in Table 2 into four categories. The first category included sales events related to a calendar date, such as Memorial Day or Labor Day. The second category included events related to different seasons of the year, such as March or Spring. Following Duncan and Hollander (1977), we grouped sales events such as Fire or out-of- Business under business distress sales. Finally, the remaining sales events were listed under specialized sales.

In general, respondents were in agreement in describing the types of products being on sale for 8 of 12 calendar sales. For Labor Day, Memorial Day, St. Patrick's Day, and President's Day, respondents mentioned divergent products. For the Business Distress Sales, the most common response was "everything-in-store," or "store-out- merchandise." In the category of specialized sales, linen for White Sales, "everything-in-store" for Grand Opening, and school related items, children's clothing for Back-to-School Sales were the most common items mentioned by the respondents. In the seasonal sales category, "gardening tools" was frequently mentioned for the spring sales.

## CONCLUDING COMMENTS

In this study, we examine the consumers' perception of sales events and the realization of their expectations. A two-page long questionnaire was mailed to 1000 households, of which 286 valid responses were obtained. Four major parameters were used in data collection tool. First, respondents were tested on 'familiarity' with sales events. Second, respondents were asked whether they have purchased items in one of these events. Third, the respondents were asked for descriptions of products in a certain sales event. Fourth, respondents were asked to indicate their expected percentage of discounts in these sales events. Finally, respondents were asked to make a judgment whether their actual savings were above, the same or below their perceived value. Respondents were limited to the primary shoppers in the household. Our findings indicate that it is safe to say that retailers have "cried wolf" too often and, as a result, consumers do not have a clear idea about merchandises being on sale, nor believe that participating in the sales events will result in a substantial savings for them. Furthermore, awareness and ability to recall about a certain sale event was found to be conforming to expected participation. There are, however, few exceptions. Our data shows that of the thirty-one sales events there are five sales events for which congruence between awareness, participate and realization was high. Consumers were also consistent in describing the items being on sales for these events (Table 5). The average awareness remained high for *White Sale, New Year sale* at 98%, closely followed by *Grand Opening Sale and Christmas Sale.* Further*,* we observed that awareness about a sales events did not go hand in hand with participation in the same sale. As depicted in Table 5, average participation remained low for *White Sale* and *New Year Sale*. Average realization remained comparatively high for *Grand Opening Sale*.

Table 5: Sales Events with Congruent Higher Than Average Ratios

| Classification of Sales Events | Average Awareness (%) | Average Participation (%) | Average Expected Discount (%) | Average Realization (%) |
|---|---|---|---|---|
| Christmas Sale | 93 | 84 | 30 | 57 |
| Grand Opening Sale | 95 | 83 | 30 | 74 |
| New Year Sale | 98 | 61 | 30 | 59 |
| White Sale | 98 | 67 | 26 | 57 |
| **Average** | **96.6** | **73.2** | **32.8** | **61.8** |

Second, what is the consumers' expected level of savings from a given sales event? Third, do potential customers believe that their expected savings will be realized in a particular sales event? Fourth, what is the relationship between consumers' expected savings and the past "performance" of a given sales event? Based on the results of this study, we make the following recommendations for the retail business community. First, managers may avoid inventing new sales events. Results of our study indicate that there are already too many of them in the market place. Thus to answer the first objective of current study, perception about sale events has been linked to 'purpose' and 'theme' of sales events. An increasing number of sales events can result in suboptimal outcomes. If consumers are not aware of the goods on sale, their participation in the sales event will be low and expected savings will be less. Second, sales events, like brand names, should say something about the nature of the products. Sales events stand for a particular event celebration which should be appropriately exhibited by the products (on sale) related to that particular event. Consequently, the third objective of our study was addressed, the perceptions formed about sale events, the 'theme'-products on sale under certain event theme influences customer expectations and satisfaction post an event. Managers may avoid offering items for sale that are incongruent with the public image of those sales.

For example, selling gardening tools during a New Year's Sale, swimsuits on a Labor Day Sale or offering everything possible including expensive household appliances on a Mother's Day Sale, would most likely not lead to increased participation. Items on sale and percentage of discount offered should conform to 'brand image' of a sales event. Third, managers may avoid ambiguous sales events such as Boss-is-on-Vacation, Groundhog and Presidents' Day Sales. These events have either different meanings to different customer groups or no meaning at all. Consumers also associate these events with business gimmick rather than genuine sales. The study's objective of 'past performance' and 'expected savings' has been addressed under aforementioned recommendation.

The notion of worth attached with ambiguous sale events is substantially less, we suggest that to avoid such negative consumer perceptions, companies should reduce the number of sales events and rather focus on the theme of the sales event. This will reiterate the trustworthiness and pertinence of a sale event. Fourth, managers are recommended to base the price discounts on some research findings about customers' expectations in that sales area. To address our fourth objective, it was observed there exists a strong correlation between past performance and expected level of savings in sale event. For building a sustainable and successful sales event it is crucial to understanding the benefits expected by customer and their awareness various offers. Finally, retail stores staging sales events should create reasonable expectations through these promotions which can possibly satisfy the consumer expectations. A high discount is likely to yield a sudden spike in sale of discounted products. But in long term this strategy may discourage customers to buy without discount and also negatively affect brand value. We have found that neoteric genres of consumers are becoming increasingly aware of small details of their purchases i.e., miniscule changes in quantity offered, changes in MRP (materials requirement planning) and alteration in packaging. Thus to maintain a positive brand recall it is advisable to set reasonable expectations from sale events.

The current study has several limitations. First, the sample sales events covered are not an exhaustive list of sales events being held in the United States. There are numerous specialized sales events that often reflect the inventiveness of the local merchants throughout the United States which were not covered due to both time and monetary constraints. Second, in order to limit the scope of our study, we did not explore the underlying causes of consumers' perceptions and levels of their expected savings. Further study into causes behind consumers' perceptions of sale events is crucial for the future of 'sales' marketing strategy. The aforementioned areas remain a fertile avenue for additional research.

**NOTE**

1. We are treating Bankruptcy sales and Out-of-Business sales as two different events. Our interviews

with the panel of graduate students responsible for suggesting the sales names revealed that they attach a sense of urgency to bankruptcy sales. Respondents believed that the retail stores having this type of sale are under court order to liquidate its merchandise. Such sense of urgency was not present in Out of Business sales.

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# USING BIG DATA TO PREDICT CONSUMER RESPONSES TO PROMOTIONAL DISCOUNTS AS PART OF SALES & OPERATIONS PLANNING

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**ABSTRACT**

*Price promotions (discounts) are a well-known means by which a supply chain can stimulate demand for a product. These promotions could affect demand for a product in three ways by: 1) increasing the overall market growth, 2) stealing market share from competitors, and/or 3) increasing the amount of consumer forward buying. Supply chain members must be able to estimate these effects on demand and the corresponding effects on both revenues and costs when conducting sales and operations planning. We analyzed the effects on demand using a big data approach on promotional data made publicly available by Grupo Bimbo (a multinational bakery product manufacturing company headquartered in Mexico City). This company offered promotional coupons to customers for particular items. Bimbo captured sales history for each customer on how often they shopped, what they bought, and the amount that they spent. Bimbo then tracked how many times during the next year that customers returned to buy the promoted items at full price. Using this data set, we assessed which types of offers were more effective at achieving the goal of increasing repeat purchases at full price. Whether the offer was for a weekend or weekday had no significant effect. However, we found that a larger discount percent was associated with fewer repeat purchases at full price. Further, customers who tended to spend more, on average, per trip had a higher number of repeat purchases for an item.*

**JEL:** C33, C35, M110

**KEYWORDS:** Big Data, Data Analytics, Multiple Regression, Promotions, Sales and Operations Planning

**INTRODUCTION**

When performing sales and operations planning for a supply chain, the manufacturer must be able to understand and anticipate the effects on demand, revenue, and costs that result from offering a discount on a product. The starting point for this planning is to estimate how and why demand will change over the planning horizon when a discount (sales promotion) is offered to customers. Grocery retailers have been applying advanced analytic tools to customer data to tailor promotional offers to customers based on their shopping history. For example, one study noted that Kroger tailored coupons to regular customers and increased customer coupon redemption rates to nearly 50% compared to an industry average of 1 to 3% (Manthan). Kroger employs more than 100 analysts to sift through hundreds of terabytes of shoppers data (McClean, 2015). Additionally, companies are using data analytics for purposes beyond collecting and analyzing sales data. For example, Grupo Bimbo has used Brandwatch Analytics to track customers' online conversations, trends, and ranks to determine the viability of new product launches (Dua, 2017). We present the results of an analysis of a big data set related to incentives (coupons) that Grupo Bimbo offered to customers and customer responses (number of repeat purchases) to those offers.

Using this data set, we assessed which types of customers and offers were associated with increased repeat purchases at full price. Whether the offer was for a weekend or weekday had no significant effect on repeat trips. However, we found that larger discounts spurred fewer repeat purchases of a promoted item, and customers who tended to spend more on average per trip had a higher number of repeat purchases for a promoted item. The remainder of this paper is organized as follows. The next section focuses on literature relevant to the anticipated effects of price promotions. Next, we discuss the data and methodology used in the current study. In the following section, we present the results and a discussion of those results. The paper closes with some concluding comments.

**LITERATURE REVIEW**

This section summarizes the literature on price promotions and the effects expected from those price promotions. In a seminal article, Neslin and Shoemaker (1983) criticized managers for evaluating coupon promotions on surrogate measures (e.g., redemption rates, market share, and the direct costs of the coupon promotion) instead of estimated net profitability. Chopra and Meindl (2016, p. 234) argued that when a firm offers a promotion, that period's demand for an item tends to increase based on three factors: market growth, stealing share, and forward buying. Market growth corresponds to an increase in consumption of a product by new or existing customers. Stealing share refers to customers substituting the firm's product for a competitor's product. Forward buying refers to customers moving up future purchases to the present. Estimating item demand for the promotion period and future periods enables a manufacturer to determine when to offer a discount and the size of the discount to offer. Therefore, the manufacturer must estimate these three effects before conducting sales and operations planning. To estimate these effects, a planner must have a deep understanding of the effects of coupon promotions on demand.

DelVecchio, Henard, and Freling (2006) argued that despite the long-run use of sales promotions, brand managers and marketing scholars still lacked a clear understanding of the effects of sales promotions on post-promotion brand preference. Although they argued in their meta-analysis that sales promotions do not affect post-promotion brand preference (on average), they went on to analyze individual effects on post-promotion brand preference. For example, they argued that post-promotion brand preference was more favorable when the sales promotion was a coupon or premium and that large promotion (> 20% of a product's value) had a detrimental effect on brand preference. Zeelenberg and van Putten (2005) proposed that a sales dip after a product has been promoted might result from forward buying/stockpiling by customers taking the discount and/or by customers who missed a large discount for their regular brand being more likely to switch to another brand of that product.

Anderson and Simester (2004) conducted three field studies of promotions for durable goods and concluded that with respect to repeat purchase rates, increasing the amount of a price promotion had a positive long-run effect among prospective customers (due to favorable expectations about future price and/or quality levels) and a negative long-run effect on established customers. In summary, the previous literature on the size of discounts suggests that companies could see increases in demand and brand preference by limiting the use of large price promotions to new customers only. Mouland (1998) reported on a study of the relationship between coupon usage and consumer spending and concluded that coupon redeemers were heavier buyers of a brand than non-coupon buyers were. In addition, repeat purchase rates for couponed brands were higher among coupon redeemers than non-redeemers. Mouland noted that this finding on repeat purchase rates contrasted to a general perception that coupon redeemers have low rates of repeat purchase. Similarly, Arce-Urriza and Cebollada (2017) found results that showed that frequent customers were more influenced by promotions than infrequent customers were. Lal and Bell (2003) studied the use of a promotional coupon offered to customers in a frequent shopper program at a U.S. grocery retailer and found that a ham promotion coupon had the biggest effect (% increase in overall spending) on the worst customers (low spenders). In another study, Thach and Olsen (2015) analyzed the amount spent by customers on wine. They observed that low spenders were more likely to use wine apps to find coupons for

grocery stores, while moderate and high spenders were more likely to use social media instead to search for product information. In summary, the relationship between the amount of consumer spending, repeat purchases and coupons appears to be mixed.

## DATA AND METHODOLOGY

We obtained data that Bimbo Group (headquartered in Mexico City) made publicly available (Acquire Valued Shoppers Challenge). Bimbo made these data publicly available in large relational files and included a warning on the web site that the four decompressed files required about 22 GB of space. To ensure confidentiality, Bimbo scrubbed the data to anonymize customer and sales information. The web site included another warning that the specific meanings of fields would not be provided and that viewers should not ask about the meanings. Therefore, we needed to observe the data and apply some judgment regarding the meaning of some fields. In addition, as advised by Bradlow et al. (2017), we used data based on promotional theory in our models, rather than relying entirely on a data driven, data mining approach, for which we indiscriminately would have included all variables provided in the Bimbo data set. The three of the four files that we used contained the following information:

*trainHistory.csv* : Includes incentives offered to each customer and information about each customer's response to the offer (a coupon) for a specific product. Our analysis of the data indicated that coupons were sent to customers March – April of 2013. Each record contained the following data: customer identifier, an identifier for the offer, the geographical market area in which the item was sold, the number of times that the customer made a repeat purchase of the item, and the date that the customer received the offer. Note: This file included the <u>number</u> of repeat purchases post-offer only—it did not include information on the exact period over which those repeat purchases were tracked.

*transactions.csv* : Includes transaction history for all Bimbo customers and all products that they purchased (not just items for which an incentive was offered) for at least 1 year prior to the customer's offered incentive. Note: Our analysis of the data indicated that transaction data were recorded for March 2012 – July 2013. Each record contained the following data: customer identifier, store number where the Bimbo item was purchased, the product category to which the item belonged, the retail company that sold the item, the Bimbo brand to which the item belonged, the date of the customer purchase, and the quantity and the dollar amount for the item purchased by the customer.

*offers.csv:* Includes information about the offers. As previously stated, we analyzed offers made between March–April 2013. Each record contained the following data: an identifier for the offer, the product category to which the item belonged, the number of units that a customer needed to purchase to receive the discount on the item, the retail company that sold the item, the dollar value of the offer, and the Bimbo brand to which the item belonged. Note: Percent discount for an offer was not provided in this file. First, we estimated unit price by dividing the dollar amount of each purchase by the purchase quantity. Second, we divided the dollar value of the offer by unit price of an item to determine percent discount. We merged the files along key fields, e.g., customer id, and then calculated intermediate variables of interest, such as mean dollar spent and number of trips by customer and company.

After calculating our variables at the aggregate customer level, we removed detailed data to reduce the data set size to include only those records and variables needed for our analysis. We included control variables to remove spurious effects, e.g., perhaps customers who shop on weekdays work part-time and thus might not buy items at full prices after receiving an offer, or any other confounding effects outside of the main independent variables that we studied. To avoid presenting results influenced by outliers, after calculating the variables of interest, we Winsorized our data set at the 1% level to account for outliers that appeared to have resulted from data recording errors. Our final data set sample consisted of 160,057 customers, with 37 unique offers given to them on 12 specific Bimbo brands, for a total 349,655,789 records. Because

consumers, their preferences, and their buying patterns are motivated by many unknown factors, coupled with the anonymized sample data provided by Bimbo, we did not expect our multiple regression model to identify all factors that would predict consumer purchase responses. The R-squared of a model tells how much of the variability in the dependent variable is predicted by the variance in the control and independent variables. We did not anticipate a large R-squared value in our model, but we did expect that the factors we were able to test would be statistically significant in predicting increased (decreased) customer repeat purchases at full price after an offer is given. A description of the variables follows.

Variables

Dependent Variable

*Repeat Trips*: number of times that a customer made a repeat purchase of a particular Bimbo item after redeeming a coupon for that item
Control variables:

*Weekend* : a dummy variable based on the date that a customer received the offer (coupon) from Bimbo
*Company 1 ... Company 10* – dummy variables used to code ten of the eleven retail companies selling Bimbo items. Note: When all ten values equaled zero, this corresponded to the 11th store, which was used as the reference case.

Independent Variables

*Mean Spent per Trip ($)* : the mean amount spent (converted from pesos to dollars) on a particular Bimbo item per customer per shopping trip in the training data

*Number of Trips* : the mean number of trips for which a customer bought a particular Bimbo item (determined based on historical transaction data from at least one year prior to an offer on an item)

*Offer Percent* :the percent discount off the regular retail price of an item Using these data, we first ran a multiple regression using Stata 14 by specifying *Repeat Trips* as the dependent variable, *Mean Spent per Trip ($)* and *Number of Trips* as independent variables, and control variables for *Weekend* and *Company*. The first hypotheses that we tested were:

Hypotheses

As mentioned above, Mouland (1998) concluded that coupon redeemers were heavier buyers of a brand (i.e., spent more) than non-coupon buyers. Even though the relationship between the amounts of consumer spending, repeat purchases and coupons appears to be mixed, we assumed that customers who spend more on Bimbo items or are in the store more frequently to purchase Bimbo items are more likely to purchase repeats of a given item that they tried through coupon shopping. Our regression equation is:

$RepeatTrips = \beta_0 + \beta_1(Company_1) + \beta_2(Company_2) + \beta_3(Company_3) + \beta_4(Company_4) + \beta_5(Company_5) + \beta_6(Company_6) + \beta_7(Company_7) + \beta_8(Company_8) + \beta_9(Company_9) + \beta_{10}(Company_{10}) + \beta_{11}(Mean) + \beta_{12}(Offer) + \beta_{13}(NumberTrips) + \varepsilon_{it}$

Given these relationships, we propose the following two hypotheses:

> *H1: Customers with a higher mean spent per shopping trip will be positively associated with more repeat trips post-offer to buy the item at full price.*

*H2: Customers who shop more frequently will be positively associated with more repeat trips post-offer to buy the item at full price.*

Next, we added *Offer Percent* into the regression model. Anderson and Simester (2004) noted that large discounts should be offered to new customers only. Given that the data that we studied were captured for existing Bimbo customers only, we tested the following hypothesis:

*H3: A higher percent offer will be negatively correlated with repeat trips to buy the item at full price.*

After that, we tested for interaction effects in the second regression model based on the following reasons: Expanding on hypothesis three, we theorized that the higher the discount percent, the more likely customers would be to stockpile an item. Therefore, we expected to observe a moderating relationship of offer percent on the number of repeat trips for higher mean spent per trip and higher frequency of shopping trips. Those who spend more are less likely to repeat purchase if a higher discount percent is offered because they have the disposable income to buy large quantities of an item when a discount is offered compared to customers who cannot afford to buy extra items. In addition, the greater the percent of the discount, the more likely a customer who regularly purchases a product will be to stockpile that highly discounted product. Moreover, those who shop more frequently are less likely to repeat purchase if a higher discount percent is offered because they also are able to stockpile, and then on subsequent trips, they will not need to purchase the previously discounted item. Therefore, we tested the following hypotheses by adding on *Offer Percent* as a moderator:

*H4: The offer percent moderates the relationship between higher mean spent and repeat trips, such that higher offer percent decreases repeat trips.*

*H5: The offer percent moderates the relationship between frequency of shopping and repeat trips, such that higher offer percent decreases repeat trips.*

## RESULTS AND DISCUSSIONS

The models in this study were analyzed using Stata 14 to perform the two regressions shown below. Both models used Repeat Trips as the dependent variable. Column 1 of Table 1 shows the ANOVA results for the first model with the control variables and the three independent variables (Mean Spent per Trip ($), Offer Percent, and Number of Trips). Column 2 shows the ANOVA results from taking the first regression model and adding in the moderation effects of Offer Percent. Adding in moderation effects did increase the explanatory power of Model 2 over Model 1 (R-squared). In addition, the second model does point to statistically significant aspects that lead to more (fewer) repeat purchases at full price post-offer.

Hypothesis Results

*H1: Customers with a higher mean spent per shopping trip will be positively associated with more repeat trips post-offer to buy the item at full price. This hypothesis was supported.*

*H2: Customers who shop more frequently will be positively associated with more repeat trips post-offer to buy the item at full price. This hypothesis was supported. There was mixed information in the literature about consumer spending, repeat purchases, and coupons. Our findings indicate that the more a customer spends per trip and the more frequently a customer shops, the more likely a customer is to make repeat purchases of a discounted item.*

> *H3: A higher percent offer will be negatively correlated with repeat trips to buy the item at full price. This hypothesis was supported.*

We also found that a greater percent discount did not lead to more repeat purchases at full price. Customers will stockpile items that they regularly buy when they have the disposable income to do so. The greater the percent of the discount, the more likely a customer who regularly purchases a product will be to stockpile that highly discounted product. A customer who shops frequently will notice a highly discounted product and will be more prone to stockpile that item. If the discount percent is high, a customer is more likely to stockpile the item. This logic brings us to hypotheses four and five.

Table 1: Multiple Regression Results for Models 1 & 2

| VARIABLES | (1) Repeat Trips | | (2) Repeat Trips | |
|---|---|---|---|---|
| | Coeff. | P>\|t\| | Coeff. | P>\|t\| |
| Weekend Dummy | -0.0017 | 0.970 | -0.0063 | 0.887 |
| Company 1 Dummy | 0.5868*** | 0.000 | 0.6789*** | 0.000 |
| Company 2 Dummy | -0.2472 | 0.108 | -0.3983*** | 0.009 |
| Company 3 Dummy | -0.5319*** | 0.002 | -0.1119 | 0.508 |
| Company 4 Dummy | 0.1758 | 0.296 | 0.5035*** | 0.003 |
| Company 5 Dummy | 0.1072 | 0.622 | 0.3990* | 0.066 |
| Company 6 Dummy | 1.9640*** | 0.000 | 1.9283*** | 0.000 |
| Company 7 Dummy | -0.1510 | 0.346 | -0.0571 | 0.720 |
| Company 8 Dummy | 1.8955*** | 0.000 | 1.8966*** | 0.000 |
| Company 9 Dummy | 0.8830*** | 0.000 | 1.0055*** | 0.000 |
| Company 10 Dummy | 3.1128*** | 0.000 | 3.3459*** | 0.000 |
| Mean Spent per Trip ($) | 0.0948*** | 0.000 | 0.2321*** | 0.000 |
| Offer Percent | -1.6611*** | 0.000 | 1.0887*** | 0.000 |
| Number of Trips | 0.1009*** | 0.000 | 0.2709*** | 0.000 |
| Mean Spent per Trip ($) x Offer Percent | --- | | -0.3631*** | 0.000 |
| Number of Trips x Offer Percent | --- | | -0.3752*** | 0.000 |
| Constant | 0.2304 | 0.203 | -1.0321*** | 0.000 |
| Observations | 40,063 | | 40,063 | |
| R-squared | 0.0821 | | 0.0924 | |
| F | 255.93*** | | 255.91*** | |

*This table shows the results of both regressions. ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively. Both regression models were statistically significant. In Model 1, Mean Spent per Trip, Offer Percent, and Number of Trips were statistically significant predictors of Repeat Trips. In Model 2, Mean Spent per Trip, Offer Percent, and Number of Trips were statistically significant predictors of Repeat Trips. However, the slope for the Offer Percent variable switched from negative to positive. All interaction effects were statistically significant as well.*
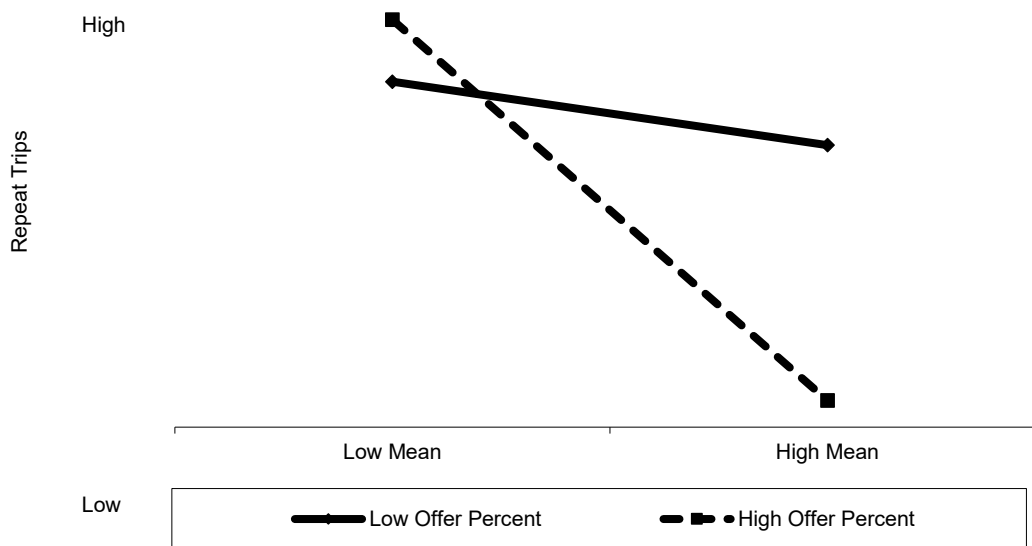
> *H4: The offer percent moderates the relationship between higher mean spent and repeat trips, such that higher offer percent decreases repeat trips. This hypothesis was supported.*

> *H5: The offer percent moderates the relationship between frequency of shopping and repeat trips, such that higher offer percent decreases repeat trips. This hypothesis was supported.*

Although heavy shoppers (higher mean spent per trip) seem the most likely to make a repeat purchase of an item at full price post-offer, this was not the case when we accounted for the effects of percent discount. A heavy shopper responds better to a lower discount percent coupon. A shopper who spends less (lower spend per trip) is more likely to continue to buy an item for which they redeemed a high discount percent coupon (see Figure 1 below). This again could be explained by customer stockpiling as the customer who stockpiles would display a higher amount spent per trip than the customer who is purchasing an item for that single promotion.In addition, those customers who shop more often are less likely to repeat purchase at full price after buying an item at a large percent discount. For infrequent (low number of trips) shoppers, the opposite is true—they perhaps will try an item with a heavily discounted offer and come back and buy that item at full price more often than they would purchase an item with a lower percent offer item (see Figure 2 below). We assumed that this relationship would hold because the more frequent customers will be in the store more. Thus, the size of a promotion would favor the low discount percent because more

frequent shoppers would be less likely to stockpile the product. After analyzing the data, we recognized that there is a possibility that high percentage promotions lead to forward buys for customers who spend a large amount (high spend) and shop more frequently (high number of trips). Those who spend less (low spend per trip) and shop less frequently (low number of trips) could be first time users of a product. Therefore, the high percent promotions could be reaching the intended customers for repeat purchasing.

Figure 1: Mean Spent Per Trip X Offer Percent Interaction



*This figure shows the relationship of repeat trips to customers with low mean purchases versus high mean purchases on the x-axis. The moderating effect of low versus high offer percent is indicated by the solid versus dashed line. There is no single offer percentage that fits all customers. However, higher offer percentages work better on Low Mean customers, while lower offer percentages work better on High Mean customers.*

## CONCLUSIONS

In the current study, we demonstrated a big data approach to analyzing the effects of a coupon campaign on consumer repeat purchases. We found the following: it is important to control for company because it might be that customers who shop at a "bargain" store might have different price sensitivities to coupons versus customers who shop at "higher end" stores. How much customers spend each shopping trip on Bimbo items brands and how often they go shopping are significant predictors of their likelihood to respond favorably to a coupon. The goal is to offer the right coupon to customers to incent them to return to buy the item many times at full price. The offer percent value has been shown to be significant in prior research, and we found that to be true here as well. Of particular interest in our findings is that a higher discount percentage on the offer works only for some customers (infrequent shoppers and lighter spend shoppers). It is important to vary the coupon discount percent according to customer criteria as we have identified here.Some of the challenges that we faced were that not all of the data that had been collected by Bimbo were made available. A larger and more complete data set would allow other relationships to be tested and would likely have more predictive power of repeat purchases. We posit that the retailer point of sale (POS) data for Bimbo were transmitted to Bimbo. Using all retailer data, we could look for patterns for complementary items and generate better estimates of frequency of shopping and mean spend given that our predictions of repeat purchases were calculated using the available data on purchases of Bimbo products only. In addition, the enormous size of the datasets was right at the limit of a normal desktop PC's capability to handle and analyze. Because the mean and frequency of purchase variables were based on prior purchases, we were not able to analyze offers given to customers for their first time purchases of that item.

More data fields would need to be available because prediction of first time buyers cannot be based on their prior purchase history of that item. Specifically, having demographic data from customers likely would increase the predictive power (R-squared) of the models. Having a loyalty program that asks for data on gender, household income, etc. would produce useful data. Harmon and Hill (2003) noted in their empirical study that men and women do have different purchase patterns. Porter (1993) explored asking for information in exchange for coupons in a case study. We assumed that the coupons were delivered electronically, but if coupons were printed, they could be traded and that would obscure the true demand and repeat purchase pattern (Su et al., 2014). Relatedly, in-store coupons versus discounts advertised on the shelf and given at checkout have different effects on consumers (Dhar and Hoch, 1996). Their work finds nuance in the area of price discriminating consumers, but it would be interesting to compound those discounts (for all) with direct to specific loyal consumer offers (for some) to see the interactions.

Figure 2: Number of Trips x Offer Percent Interaction
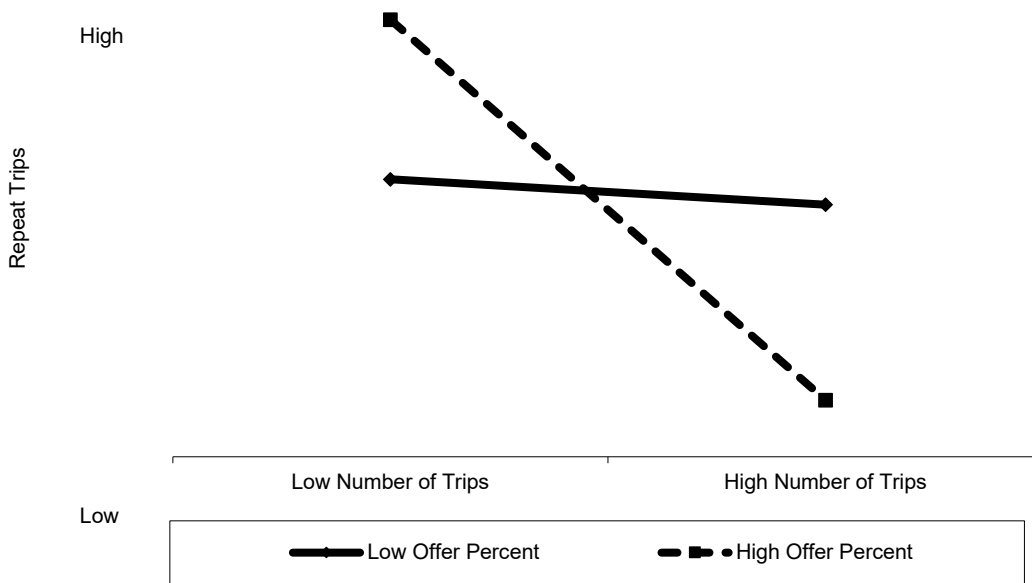


*This figure shows the relationship of the number of trips a customer made pre-offer to their number of repeat trips post-offer. There is no single coupon strategy that fits this dichotomy of customers. Customers who shop infrequently will respond more to a High Offer Percent discount while a Low Offer Percent works better with customers who shop more frequently.*

Suggestions for future research include adding in other customer purchase patterns for commonly paired items or substitute items regardless of manufacturer. For example, a customer who buys peanut butter from a competitor likely would purchase another manufacturer's jelly or bread product. We did not have complete purchase data, only data for Bimbo products. The store point of sales (POS) terminals would collect all data and provide a much richer dataset to explore purchase predictors. Second, it would be important to know which buyers are first-time buyers as opposed to brand-, or product-loyal customers. Knowing the type of customer would allow us to determine if the customers are more likely to stockpile or make forward buys. Third, information on the age of a product would be helpful. We then could examine the benefits of promotions for new versus older items regarding customer repeat purchases. Given that the current data set includes only Bimbo customer data, it is not possible to ascertain whether a product sales increase is due to growth at the expense of a competitor's product or just a general increase in total demand (perhaps the population is growing or a local market recently closed limiting options for buying food). Total sales information by retailer (all products sold, not just Bimbo), and perhaps a cross reference of which products are substitutes, would allow future researchers to enhance our findings by showing that the

increases post offer were actually stealing market share from a competitor rather than creating a general growth in the entire retail market.

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# KNOWLEDGE, SKILLS, AND OTHER INDIVIDUAL CHARACTERISTICS OF ACADEMIC RESEARCHERS

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## ABSTRACT

*This research evaluates and categorizes individual characteristics and abilities that higher education researchers should possess in a knowledge economy. We examine a sample of 319 participants dedicated to the investigating processes from public and private higher education institutions in Puerto Rico. A multivariable analysis is used in which technical successive fractural analysis, cluster, and manova analysis were applied to explore and confirm the principle relevant factors in the abilities and skills studied. From the sample, the researchers identified two groups of students that showed significant differences in their responses and how they categorized their abilities. Student subgroup 1 viewed first-priority to be to "adjust to change, add value to society and the economy, in addition to having the ability to seek for funding to support their investigations." Student subgroup 2 considered first-priority to "adjust to change, add value to the economy and society and become entrepreneurs." Furthermore, this investigation found that professors considered the most relevant category to be "multidisciplinary and practical and that results should be disseminated." They have also balance benefit to the economy and society with quality of life.*

## INTRODUCTION

Knowledge is a central part of every economy. However, with the arrival of globalization, new emerging economies and markets, natural resources shortages and technology advancement many countries are increasingly trying to moved forward to become knowledge-based economies (Bozu & Canto-Herrera, 2009; Medina, 2014; Noel & Qenani, 2013). Unlike any traditional economy approach where capital and natural resources are central to the economic development, its pillars are built upon knowledge as the foundation where science, technology, and innovation drive the economy (Wolfe, 2005 cited as Saleim, 2014).

In a knowledge based economy, knowledge becomes the greatest asset. Knowledge places them in the lead compared to other countries that are still in the transition stage or are lagging behind (Saleim, 2014). In a knowledge-based economy, human capital is a lead actor and a producer of knowledge. Specifically, the workers are defined as knowledge workers. In that sense, universities are an important niche for this kind of worker or human capital. These institutions, through the work of academic researchers, help produce new knowledge that has its use for social and economic development. Academic researchers must count as an important success, achievement of a knowledge-based economy status. Countries must acknowledge the requirements and proposed changes of a knowledge-based economy framework in the development of human capital that will help develop new knowledge (Melnikas, 2013; Noel & Qenani, 2013; Nour et.al, 2015).

This study expands the existing literature and provides a framework or model for the development, attraction and retaining of knowledge workers such as academic researchers. The goals of the study are to: (i) Evaluate and categorize the different skills, competencies, and individual traits that researchers should have in a knowledge-based economy and (ii) Use multivariate analysist to explore, and confirm the main factors and the relevance of the skills and competencies identified.

To achieve the study purpose we administered a survey of 15 questions. The survey was validate by literature and a group of identified experts in the themes of economy, research and the academy. The sample was composed of research professors and students that were active in the tasks of research at different universities in Puerto Rico. The research conducted between 2010 and 2011 involved a sample of 319 participants. The first section of this paper discusses the literature related to skills, competencies, and individual characteristics needed by knowledge workers such as research academics. The second part present the methodology section that describes the multivariate statistical analysis techniques, factor analysis and cluster analysis utilized for the exploratory part of the paper and confirmatory analysis. The last part of the study emphasizes the most relevant findings, conclusions, and limitations.

## LITERATURE REVIEW

Knowledge-based economies lead researchers and scholars to pay more attention to intangible resources. Many developed countries confront natural resource shortage and the rapid changes provoke by globalization and all the particularities that it brings to governments and organizations. As a result, a newer focus of resources like technology, information, learning, workers' skills, and experience, cooperation and networking become a competitive advantage to many countries. For that matter, is important to be able to adopt strategies that capture, develop, and retain these new resources (Bedford, 2012). In this scenario, knowledge and academic production represents an intangible resource that provides a sustainable competitive advantage of countries (Castro-Gonzáles, Peña-Vinces & Guillen, 2016 and Manfredi & Antonelli, 2014). Nevertheless, the people, the workforce, and human capital of a country are the only ones that can produce new knowledge. In that sense, countries, organizations, and society itself consider human capital as a source of differentiation and competitiveness. This study emphasizes, identifies and evaluates the requirements established by the literature about knowledge-based economies in terms of skills that will help sharpening the quality of these workforce. The concept of knowledge development as a resource for governments and society is not a new one (Bedford, 2012; Dubina et.al, 2012; Germán, et. al. 2014; Strozek, 2014).

The term knowledge-based economies appears in the discussion of American literature during the sixties with the economist Fritz-Machlup. He describes, for the first time, knowledge as a convenience and attempts to measure the magnitude of its production and distribution within the modern economy, laying the groundwork for what now known as a knowledge-based economy (Medina, 2014). Today, this term is use to explain an economic approach in which knowledge plays a crucial role, and its production is the resource for the growth of a country's economy and society. At the current stage of economic development, accumulated knowledge is a substantial part of the production and a scenario in which organizations, individuals, and communities create, acquire, and spread formal and tacit knowledge. In other words, the creation, dissemination, and usefulness of knowledge are the engine of growth, wealth increase, and employment in a country. There exists no consensus on how to achieve this new approach. Nevertheless, knowledge workers like academic researchers and researchers in general represent an important part of the strategies to endure in this new economy (Andres, et.al. 2015; Germán, et. al., 2014; Medina, 2009; Medina, 2014; World Bank, 2009).

The knowledge-based economy involves both governments and international community in designate activities and policy decisions making regarding knowledge that can provide value to the whole society. The way to achieve this is still confusing and undoubtedly complex (Medina, 2014). It is necessary to

clarify and make tangible the concepts and pragmatisms of this approach. We must learn what defines an efficient work of researchers and what it requires of them to achieve it. Expanding the paradigm where the academic researcher is responsible for developed knowledge that goes beyond what was required in the past, and support quality research and its application to the investigative work. A researcher that is label as a knowledge worker must comply with the characteristics that define it (Dubina, et.al, 2012; Dworak, 2010).

Knowledge Workers and Academic Workers

Countries that look forward to being a knowledge economy or at least to maximizes its human capital intellect need to be clear about what constitutes a knowledge worker. Peter Drucker in his book "The Effective Executive" (1966) described and differentiated the concepts manual worker and knowledge worker. A manual workers work demands more physical ability than intelligence in order to produce goods or services. On the other hand, a knowledge worker works with his mind and intelligence, to deliver ideas, knowledge, and information (Medina, 2014). Knowledge workers include those such as data analysts, product developers, planners, programmers, and researchers who are engaged primarily in acquisition, analysis, and manipulation of information as opposed to in production of goods or services.

An academic researcher uses his intellect to generate knowledge and to pursue truth. Categorizing this type of worker as a knowledge worker is the correct way of see them. Not only because they use their mind and intelligence to generate an intellectual product, but because this production can be use by non-academic institutions (like government and business) in the development policymaking and other commodities (Brew & Lucas, 2009). At the theoretical level, the acquisition of competencies is crucial for productivity, innovation, and living standards. For universities and managers, the role of knowledge workers in attaining management success has been acknowledge. For that matter, it is important to have the right framework to recruit and select, motivate and measure the performance of knowledge workers. The right framework will also come in support of a university with the desire to develop policies for retaining and attracting knowledge workers if they want to survive in the environment in constant change (Gogan, 2014).

This section describes the important of competencies and skills development in workers and the characteristics presented in the literature that can help us describe what means to be an academic researcher in a knowledge-based economy.

Studies about knowledge workers (especially researchers), explain the new demands and requirements of this new economy and the impact on the work done by knowledge workers (Madrak-Grochowska, 2015). Although is not perfectly clear, we must assume that every change in the requirements of a job's results implies the development or acquisition of new skills by the workers.

The development of knowledge workers is essential to a knowledge-based economy. Some theories try to explain the relevance of competencies in the development of individuals. Boyatzis (2008), in his paper *Competencies in the 21st century* describes the theory of action and job performance which emphasizes best-fit maximum performance, stimulation, and commitment area of maximum connection or integration between the worker and the job demands. A theory of performance is the basis for the concept of competency. Maximum performance occurs when the worker's capability or talent is consistent with the needs of job demands and organizational environment. Competencies are useful to identify the best performance of employees. They include descriptions that make it easier to identify how competencies can evolve in parallel with development and improvement of employee performance. Perhaps the most important aspect of competency models is that they align to HR systems across the organization. This includes recruitment, selection, hiring, training, performance management, compensation through development and training of employees. Knowledge Assessment Methodology also emphasizes the importance of research, education, and training. Both constitute two important pillars in its methodology

of a knowledge economy.  From the above, it seems that research, education, and training play a key role in the growth of any knowledge economy (Chen and Dahlman, 2005 as cited in Batra, 2009; Schwab, 2013). We wish to know, *which are the necessary skills to develop high-quality research in a knowledge-based economy?*  As previously stated, very few authors indicate how demands of the new knowledge-based economy will affect how the researcher performs to add value to the economic development.  Moreover, there is no known competency model or framework to explain or guide this development or any strategy needed by organizations for this achievement.  The importance of human capital formation, as a fundamental aspect of the knowledge-based economics, is not new, but is increasingly important to achieve this status.  This work performance expectations implies a change of paradigm, which as mention before also requires a change in the skills and competencies needed by knowledge workers (Dubina, et al., 2012; Germán, et al., 2014; Tan, 2016; Kulkarni, 2014; Torres et.al., 2015; Wills et.al., 2013).  To introduce ourselves to the subject of knowledge workers skills and competencies, it is fundamental to define some important terms.  We also discuss different individual characteristics that are fundamental for knowledge workers in a knowledge-based economy.

The Royal Spanish Academy defines skills as abilities, art, neatness, or property with which something done.  Skill is the ability and willingness to something" (Medina, 2009).  Alvarez & Gallego (cited in Bozu & Canto-Herrera, 2009) defines working competencies as "the set of knowledge, skills, and necessary attitudes to perform a given occupation and the ability to mobilize and apply these resources in a given environment, to produce a definite result "(p. 23).  According to De Zubiria (2006 cited in Andrés, et.al. 2015), competencies represent an implicit partly innate knowledge and formally expressed in the expertise to do something.

Knowledge in the management and development literature, is to viewed as a part of the competence profile of human resources.  The International Labor Organization (ILO 2007 as cited in Batra 2009), defines competence as ''knowledge, skills and expertise applied and mastered in a specific context''.  In that sense, the relationship between education and training as sources of generating competence becomes obvious.  Another important interpretation of knowledge is the creation of new products/processes/ technologies or management systems through the processes of research and innovation (Batra, 2009).  To remain competitive in today's global economy, the development, and strengthening of competencies, knowledge, and individual characteristics and skills in knowledge workers in general is essential for any country.  Academic researchers are not excluded, and need to develop skills, competencies, and individual characteristic accordingly to the requirements of this global scenario.

This section describes different competencies and characteristics identified in the literature that are essential in the development of researchers and knowledge workers.  We discuss different skills, competencies and individual characteristics outlined in the recruitment efforts and evaluate what other studies and organization discuss.  Countries like Austria, Ireland, Japan, Taiwan, Finland, and the United States use guidelines that include; teaching skills, teamwork, ability to transfer knowledge into something tangible, management and supervisory skills and capacity to identify, assess, and anticipate socials needs and preferences to attract, recruit, and retain knowledge workers (Pineda, 2013; Roberts, 2009)

The Unites States has been highly successful appealing to knowledge workers especially those related to the scientific and academic research. Multidisciplinary participation is one of the criteria for research projects with financial support.  Within or external to academia, an investigator must develop networks of horizontal collaboration further beyond his or her institution in which society, private organizations as well as the government participate (Dempsey, 2004; Ennals, 2004; Sharma, 2008; Zagreb, 2008).  Ennals (2004) established that multidisciplinary research and collaboration among peers are of extreme importance to a knowledge-based economy.  This multidisciplinary approach and collaboration among peers are critical in an economy where knowledge generation is a requirement.  Multidisciplinary approaches add value to the results of an investigation.  This point of view implies working with the best resources and experts.

Changes and challenges that encompass living in a globalized world expand the scope of the work done. Academic researchers in a knowledge-based economy must generate investigations and report their results. In addition, those results or scientific performance translate into benefit for the author country's economy and society (Abu Said, et al., 2015; Eliasson, 2005; Noel & Qenani, 2013; Zagreb, 2008). However, the Knowledge Workers Forum (2006, cited in Salem, 2014) argues that knowledge work is complex, and those who perform it require certain skills and abilities as well as familiarity with actual and theoretical knowledge. These workers must be able to find, access, recall, and apply information, interact well with others, and possess the ability and motivation to acquire and improve these and other skills. The importance of one or more of these characteristics may vary from one job to the next. However, all knowledge workers need the following: (i) Factual and theoretical knowledge, (ii) Finding and accessing data, (iii) Ability to apply information, (iv) communication abilities, (v) Motivation and (vi) Intellectual proficiencies (Knowledge Workers Forum, 2006 cited in Salem, 2014).

Academic researchers are instrument of change and innovation (Gurrola et. al., 2015). To achieve that purpose they must develop skills related to change management, teamwork, collaboration and be a creative person (Dang & Umemoto, 2009; Van Winden & Van den Berg, 2004). Peter Drucker, in his description of a knowledge worker, defines that key determinants of their productivity are management and organizational practices, information technology, and workplace design. Individual characteristics that people have such as honesty, hard work, integrity, teamwork, and resilience affect productivity. According to Quesada (2008), being a researcher in a knowledge-based economy is not only to be define as knowledge managers and processes' administrators. The academic researcher is an instrument of change and innovation (Dang & Umemoto, 2009; Van Winden & Van den Berg, 2004). That is a very different view of how an academic research perceived outside universities. Academics conduct research out of intellectual curiosity and with the aim of generating knowledge. Nevertheless, when knowledge is regarded as a type of resources that can traded as goods to enhance economic development, then many characteristic discussed earlier became crucial to achieve success (Brew & Lucas, 2009; Lenaghan, 2016; Liz & Wilson, 2012).

Facilitating research processes and providing direct support to adopt novel ways to investigate are characteristics required of a researcher in a knowledge economy (Andrés, et. al. 2015). Developing a global vision to identify the preferences and needs of society and the economy both at the domestic and global scenario is also essential to quality (Regets, 2007). According to experts, a researcher must be part of all processes that involve generating an investigation (Howells, 2002, cited as in Van Winden & Vanden Berg, 2004). The development and strengthening of skills and competencies related to the dissemination of their work is substantial if they add value to the work done. In this regard, the literature shows that countries like Taiwan, Japan, and South Korea have been active in promoting and educating their researchers in the creation of patents and the publication and dissemination of results (Yang et. al., 2005). Skills that go beyond their expertise such as collaboration, creativity, tolerance, appreciation of diversity, and other social skills are important parts of any high-quality higher education system (Dempsey, 2004; Medina, 2014). Ennals (2004) establish that a multidisciplinary approach and collaboration among peers are critical in an economy where knowledge generation is a requirement. This point of view implies working with the best human resources and experts to be a collaborative person. Skills that go beyond their expertise such as collaboration, creativity, tolerance, appreciation of diversity, and other social skills are important parts of any high-quality system higher education (Dempsey, 2004; Medina, 2014; Schwab, 2013).

Puerto Rico, like other countries should seek new ways to stay and be competitive on the global stage. In that sense, the development of human capital such as knowledge workers should be a priority and consider on its agenda for economic growth. The shortage of researchers compared to the needs in the area of research and development is a problem that afflicts not only Puerto Rico but also many other nations who try to break into this new form of economy (Comella et. al., 2008; Medina, 2009). According to Swarp (2007, cited in Medina, 2014), countries like the United States and the European Union have had great

success in attracting knowledge workers, such as academic researchers, are changing the focus of what is important about a good researcher.

Social factors such as an aging workforce, government policies, tightening immigration laws, new emergence economics, besides establishing strategies to attract researchers represent areas of opportunity for the country and its universities. This study contributes to the review of literature on the work of academic researchers under the new requirements of knowledge-based economies. The study results assist in determining which skills, knowledge, and skills must be developed or promoted for research so that the fruit is of benefit to the economy and society. Demand for comprehensive talent management strategies is at an all-time high for any organization including universities. The next part presents the methodology section that describes in detail the multivariate statistical analysis techniques, factor analysis and cluster analysis utilized for the exploratory part and confirmatory analysis. The last part of the study emphasizes on the result analysis, the most relevant findings, conclusions, and limitations.

## DATA AND METHODOLOGY

As part of the study, a questionnaire was administered to 319 researchers in Puerto Rico's public and private universities who are dedicated to research activities. There were 245 master and doctoral students and 74 faculties from public and private higher education institutions in Puerto Rico. This instrument was constructed using a Likert scale in which one is total disagreement and five total agreement. A copy of the questionnaire is included in the appendix of this study. We collected the data during the period from 2010 and 2012.

Multivariate analysis is used in this explorative-confirmative study. This technique permits a simultaneous multi-measure analysis of individuals and objects under study to create knowledge that can assist in a well and informed decision-making process (Castro-Gonzáles, Arias & Irizarry, 2016; Cuadras, 2014; Hair, Black, Babin, & Anderson, 2010). The following criteria are used in the design and sequential procedures of the techniques: a) identify if the 76.80% of the sample who were graduate students responded to similar subgroups. From the cluster analysis in the general students' sample, several sub-groups show similar characteristics. As a consequence, there was similar average by using the square Euclidian distance in the matrix (Fernández, 1991; Hair et al., 2010).

After the two subgroups of students had been identified, the researchers proceeded with the following criteria of the study b) a factorial analysis was carried out to each selected group from the previous cluster. The factorial analysis is a technique to lower some unobserved variables. It serves to find homogeneous variables from some observed variables. As defined, factor analysis is a statistical method used to describe variability among observed, correlated variables regarding a potentially lower number of unobserved variables called factors (Hair et al., 2010; Pérez & Medrano, 2010; SPSS-Hispanoportuguesa, 2010). After this procedure, the following phase included c) using a factorial analysis to the responses from the professors who were 23.20% of the sample. The aim was to identify categories that these investigators perceived as factors of importance and thus perform a comparative analysis of the primary factors identified among the three subgroups.

The final criterion was d) to confirm the hypothesis of the study, an analysis of variance (MANOVA) Multivariate used. It is a generalization to the models of simple analysis of variance (ANOVA) as well as to other models, which have some variables larger than one at the same time (multivariate). MANOVA is a technique that simultaneously allows the contrast of mean differences (centroids) of two or more dependent variables (Cuadras, 2014; Fernández, 1991; Hair et al., 2010; J. Pérez, 2004), which helped in the resolution of the hypothesis proposed for this study.

The investigation resulted in the identification of three groups, including each group's variables average vector labeled as Students 1, Students 2, and Professors.  Consequently, a null hypothesis proposed for the study confirmed that no significant differences exist among the vectors averages of each group.  Therefore, all the vectors are the same.  This assumption led to the hypothesis for the study that indicated that differences existed among the vector means of the sub-groups as identified from the analysis.  The mathematical expressions of the hypothesis are:

$$H_0: \mu_1 = \mu_2 = \mu_3 \tag{1}$$

$$H_1: Not\ all\ are\ equals \tag{2}$$

**RESULTS AND DISCUSSION**

Graduate Students: Cluster Analysis

A cluster analysis was completed from the graduate students' general data to verify if there were any subgroups of individuals with mutually exclusive characteristics.  The Euclidean squared distance technique (Fernández, 1991; Hair et al., 2010) used the Ward's hierarchical distance square method.  Two groups clearly identified by a Euclidean strategic cut at 150, in which the responses were different.  The first group formed by 112 students identified as Students 1(53 men and 59 women) and distributed to 15 doctoral students and 87 Master's degree students.  Students whose average responses were different to the second subgroup composed of 133 students identified as Students 2 (77 men and 56 women) of those 42 were doctoral students, and 91 were Master's students.  Figure one, corresponds to R® "output" known as a dendrogram.  The graphic clearly identified the two subgroups of students.  Two factorial analysis implemented to the subgroups to determine the principle categories stated by each group.

Figure 1: Cluster Analysis Dendrogram for Graduate Students
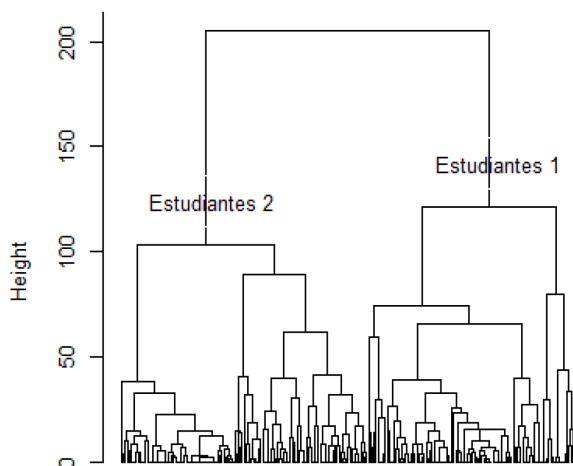


*This figure shows the output ® program of cluster analysis. Two groups of graduate students, each cluster with similar characteristics. The first cluster called "students1" is comprised of 112 students (53 men and 59 women) and the second "students 2" which is slightly larger shaped identify by 133 students (77 men and 56 women).*

Graduate Students Sub-groups: Factorial Analysis

The primary results of the study obtained by the use of the R® statistical analysis software.  Before the development of the factorial analysis, researchers measured the levels of internal reliability of the items used in the questionnaire (Moscoso, Lengacher, & Knapp, 2012).  Internal reliability of the items was

calculated and measured with the Alpha of Cronbach, according to Moscoso et al., (2012). This value should be larger than 0.7, which establishes that the instrument has adequate internal reliability. In this case, the items obtained 0.8371 alpha Cronbach and a standardized alpha Cronbach of 0.842. The data indicated internal reliability of the responses to the questions. Before doing a factorial analysis, the literature recommends testing for the adequacy of the sample by the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO). This group obtained a 0.80 relevance to do a factorial analysis (Hair et al., 2010; Moscoso et al., 2012; E. Pérez & Medrano, 2010). Bartlett's sphericity test confirmed the potential to perform a factorial analysis because the "p-value" of this test was $1.17 \times 10^{-171}$, which is much less than the level of significance of 0.05 used for this investigation.

Taking into consideration the KMO measurement and Bartlett's sphericity test, a factorial analysis was an appropriate technique to employ in this study. The next step was to obtain the most relevant results after the previous tests performed. A factorial analysis used to get data regarding the perception of each subgroup about the abilities and skills that investigators should possess in the knowledge-based era.

Students 1

The Student 1 subgroup was composed of 25 doctoral students (22.3%) and 87 master's degree students (77.7%) totalling 112 respondents. The gender distribution was 53 men and 59 women. As presented in Table 1, five principal factors were observed that explained 66% of model variance. Among these factors, there were three categories. The first component had a variance of 16.6% comprised of the variables V15, V14, V12, and V13. The second group V3, V5, and V11 provided an explained variance of 13.9%. A third principal factor composed by V4, V9, and V10 produced an explained variance of 13.9% as well. The explained variances presented in Table 2.

Table 1: Principal Components with Rotation Varimax of Students 1 Subgroup

| Variable | F1 | F1 | F3 | F4 | F5 | h2 |
|---|---|---|---|---|---|---|
| V15 | 0.802 | 0.016 | 0.229 | -0.019 | -0.046 | 0.699 |
| V14 | 0.756 | 0.027 | -0.053 | 0.074 | -0.383 | 0.727 |
| V12 | 0.684 | 0.247 | -0.263 | -0.019 | 0.175 | 0.628 |
| V13 | 0.684 | 0.081 | 0.286 | 0.198 | 0.201 | 0.635 |
| V3 | 0.067 | 0.811 | 0.268 | 0.016 | 0.070 | 0.740 |
| V5 | 0.044 | -0.692 | 0.389 | 0.046 | 0.043 | 0.636 |
| V11 | 0.336 | 0.692 | 0.106 | -0.027 | 0.120 | 0.618 |
| V4 | 0.272 | -0.034 | 0.756 | -0.104 | 0.222 | 0.707 |
| V9 | 0.015 | 0.002 | 0.727 | -0.102 | -0.401 | 0.701 |
| V10 | -0.088 | 0.195 | 0.612 | 0.226 | 0.268 | 0.543 |
| V1 | 0.312 | 0.301 | 0.328 | 0.179 | 0.245 | 0.387 |
| V8 | 0.006 | 0.041 | 0.036 | 0.846 | -0.009 | 0.719 |
| V6 | 0.179 | -0.392 | -0.130 | 0.708 | 0.275 | 0.779 |
| V7 | 0.090 | 0.294 | 0.120 | 0.561 | -0.528 | 0.703 |
| V2 | 0.029 | 0.178 | 0.166 | 0.088 | 0.782 | 0.680 |

*This table shows the results from output R® of the factorial analysis. Only 5 factors explain 66% of model variance. The first factor in importance is composed by V15, V14, V12 and V13 with 16.6%% of variance; the second factor is formed by the variables V3, V5 and V11 which explains 13.9% variance of the model; the third group formed by V4, V9, V10 and V1 explains 13.0% of variance.*

In the Student 1 group, the first factor with greater explained variance from the clustered variables was the knowledge-based economy. Investigators "must be aware that the results should adjust to change and add value to the economy and society and must have the ability to search for funding to finance their investigations". The next factor of importance was the results should "be converted into public good, be internationalized, and assist in the development of the economy and society". For this third factor, investigators should "have technological knowledge, investigate within a practical approach, and be

respectful of intellectual property. These three primary factors added up to explain 44.4% of the variance of the model and an accumulated 67% in proportion to the 5 elements.

Table 2 Variance Explanation of the Principal Components of Students 1 Subgroup

| Item | F1 | F2 | F3 | F4 | F5 |
|------|------|------|------|------|------|
| Weight SS | 2.490 | 2.088 | 2.083 | 1.692 | 1.549 |
| Proportional Variance | 0.166 | 0.139 | 0.139 | 0.113 | 0.103 |
| Cumulative Variance | 0.166 | 0.305 | 0.444 | 0.557 | 0.660 |

*This table shows the variance explanation of the principal components of Students, 1 Subgroup; the third row represents the individual variance for each of the 5 factors and in the fourth row the accumulated variance of the factors is presented. The intercept of column F5 and Cumulative variance is 0.660 which represents 66% explained variance.*

Students 2

The Students 2 subgroup composed of 42 doctoral students (31.5%) and 91 master's degree students (68.4%) for 133 respondents. The gender distribution was 77 men and 56 women. As seen in Table 3 five main factors explained their variance at 58.9% of the model. Three categories were relevant among these factors: the first component had a 15.5% of the variance and comprised by V14, V1, V15, and V2; the second group included V6, V13, and V7 with variance explanation of 13.4%. The third main factor contained the following variables V11 and V3 with an explained variance of 12.1%. Table 4 illustrates the explained variances of this subgroup.

Table 3: Principal Components with Rotation Varimax of Students 2 Subgroup

| Variable | F1 | F1 | F3 | F4 | F5 | h2 |
|------|------|------|------|------|------|------|
| V14 | 0.765 | 0.151 | -0.004 | 0.146 | 0.066 | 0.634 |
| V1 | 0.680 | 0.234 | 0.216 | 0.088 | -0.043 | 0.574 |
| V15 | 0.620 | -0.242 | -0.220 | -0.034 | 0.485 | 0.728 |
| V2 | 0.572 | 0.223 | 0.267 | 0.018 | -0.048 | 0.450 |
| V12 | 0.434 | -0.059 | 0.423 | 0.246 | 0.025 | 0.432 |
| V4 | 0.428 | 0.068 | -0.049 | -0.046 | -0.085 | 0.199 |
| V6 | 0.133 | 0.794 | 0.114 | -0.085 | -0.012 | 0.669 |
| V13 | 0.261 | 0.727 | 0.277 | 0.002 | 0.042 | 0.675 |
| V7 | 0.132 | 0.679 | -0.346 | 0.200 | 0.065 | 0.642 |
| V11 | -0.034 | 0.110 | 0.772 | 0.086 | 0.181 | 0.650 |
| V3 | 0.134 | 0.035 | 0.748 | 0.011 | -0.065 | 0.583 |
| V9 | 0.037 | -0.142 | 0.195 | 0.741 | -0.031 | 0.610 |
| V8 | -0.062 | 0.387 | 0.089 | 0.702 | 0.216 | 0.701 |
| V10 | 0.244 | 0.000 | -0.205 | 0.542 | -0.317 | 0.495 |
| V5 | -0.056 | 0.104 | 0.100 | -0.015 | 0.874 | 0.788 |

*This table shows results from output R® of the factorial analysis. Only 5 factors explain 66% of model variance. The first factor in importance is composed by V14, V1, V15 and V2 with 5.5%% of variance explained. The second factor is formed by the variables V6, V13 and V7 which explains 13.1% variance of the model. The third group formed by V11, V3, V9, V8 and V10 explains 12.1% of variance, among the most important.*

The group's first factor with greater explained variance was that the investigators, "must be aware that the results should adjust to change and add value to the Economy and Society and eventually become entrepreneurs". The second factor of importance in this group considered was that investigators should "have a well-developed technological infrastructure, be multidisciplinary, and have the ability to search for funds to investigate. Finally, the third factor, the results should "be converted into public good, and be internationalized". These three primary factors added up to a 44.4% of the variance of the model and an accumulated 69.5% in proportion to the 5 elements.

Professors: Factorial Analysis

This group was composed of 58 professors with a doctoral degree (78.4%) and 16 with Master's degree (21.6%) for a total of 74 respondents. The gender distribution was 48 men and 26 women. Previously, the level of internal reliability in questionnaire items was measured (Moscoso et al., 2012). Cronbach's alpha value was calculated and obtained 0.8212 alpha Cronbach and a standardized alpha Cronbach of 0.8299. The data indicated internal reliability of the responses to the given questions. Before doing a factorial analysis, the literature recommends testing for the adequacy of the sample by the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) was 0.71. This value is closer to the inferior limit of acceptance and reiterated through Bartlett's sphericity test. A "p-value" de $3.12 \times 10^{-44}$, a very low to the value used for this investigation of 0.05 which confirmed the Barlett law strength to perform a factorial analysis on the sample of professors (Hair et al., 2010; Moscoso et al., 2012; E. Pérez & Medrano, 2010).

Table 4: Variance Explanation of the Principal Components of the Students 2 Subgroup

| Item | F1 | F2 | F3 | F4 | F5 |
|---|---|---|---|---|---|
| Weight SS | 2.322 | 2.008 | 1.810 | 1.484 | 1.207 |
| Variance Proportional | 0.155 | 0.134 | 0.121 | 0.099 | 0.080 |
| Variance Cumulative | 0.155 | 0.289 | 0.409 | 0.508 | 0.589 |

*This table shows the variance explanation of the principal components of Students, 2 Subgroup. The third row represents the individual variance for each of the 5 factors and in the fourth row the accumulated variance of the factors is presented. The intercept of column F5 and Variance Cumulative variance is 0.580 which represents 58% explained variance.*

The results for this part obtained are shown in Table 5, which illustrates the factorial analysis of the results for the professors' group. This chart corresponds to the results. Using the Varimax method the variables were rotated to guarantee multicollinearity (SPSS-Hispanoportuguesa, 2010). From fifteen variables analyzed from the professors' group, only five factors are well represented. They have an explained variance level of 69.6% from the total. The first element represented by the questions V12, V9, V7, V8, and V15 have an explained variance of 21.4%. The second factor comprised of the questions V6, V7, and V4 contributed with 13.7% of the variance of the model. The third element, constituted by questions V13, V14, and V10, explain12.6% of the variance in the model (See Table 6). The group's first factor with greater explained variance was that the investigators "should be multidisciplinary, practical, and their investigation results should be internationalized, and add value to the Economy and Society along with the quality of life". The second factor was "have a good technological infrastructure manage efficiently the basics of technology to contribute to the development of the Economy and Society". The last and third factor has to do with how investigators should "respect intellectual propriety, accept change, and be able to search for funding to investigate. These three factors add up to 44.4% of the variance of the model and an accumulated 69.5% in proportion to the 5 elements.

Figure 2 represents a screen plot to distinguish the five factors that explain approximately 70% of the sample's variance. However, the first three elements have a 68.8% level of explained variance of the five factors that demonstrates their importance over the explained variance. A cluster analysis not performed to respect the variability rule for practical researchers. It states that for each variable there should be at least ten responses. Therefore, if this study had 15 variables, the rules would suggest having 150 replies (Cuadras, 2014; Hair et al., 2010).

Table 5: Principal Components with Rotation Varimax of the Subgroup Professors

| Variable | F1 | F2 | F3 | F4 | F5 | h2 |
|---|---|---|---|---|---|---|
| V12 | 0.790 | 0.167 | 0.254 | 0.275 | 0.161 | 0.819 |
| V9 | 0.768 | 0.107 | 0.160 | 0.000 | 0.229 | 0.679 |
| V7 | 0.767 | 0.087 | -0.001 | 0.383 | 0.027 | 0.743 |
| V8 | 0.766 | 0.128 | -0.115 | -0.100 | 0.186 | 0.660 |
| V15 | 0.629 | 0.057 | 0.409 | 0.188 | -0.081 | 0.608 |
| V6 | 0.133 | 0.869 | -0.058 | -0.063 | -0.034 | 0.782 |
| V5 | 0.146 | 0.857 | -0.012 | 0.131 | 0.167 | 0.801 |
| V4 | 0.133 | 0.528 | 0.502 | -0.039 | 0.167 | 0.579 |
| V13 | 0.087 | -0.251 | 0.686 | 0.309 | 0.060 | 0.640 |
| V14 | 0.434 | -0.117 | 0.658 | 0.103 | -0.034 | 0.646 |
| V10 | -0.055 | 0.246 | 0.624 | 0.017 | 0.249 | 0.516 |
| V1 | 0.050 | -0.108 | 0.104 | 0.870 | 0.032 | 0.783 |
| V2 | 0.341 | 0.217 | 0.188 | 0.769 | 0.050 | 0.792 |
| V11 | 0.166 | 0.000 | 0.107 | -0.087 | 0.818 | 0.716 |
| V3 | 0.150 | 0.167 | 0.107 | 0.186 | 0.761 | 0.675 |

*This table shows results from output R® of the factorial analysis. Only 5 factors explain 69.5% variance of the model. The first factor in importance is composed by V12, V9, V7, V8 and V15 with 21.4%% of variance explained. The second factor is formed by the variables V6, V5 and V4 which explains 13.7% of model variance. The third group formed by V13, V14 and V4 explains 12.6% of variance.*

Figure 2: "Scree Plot" Principal Components for the Professors
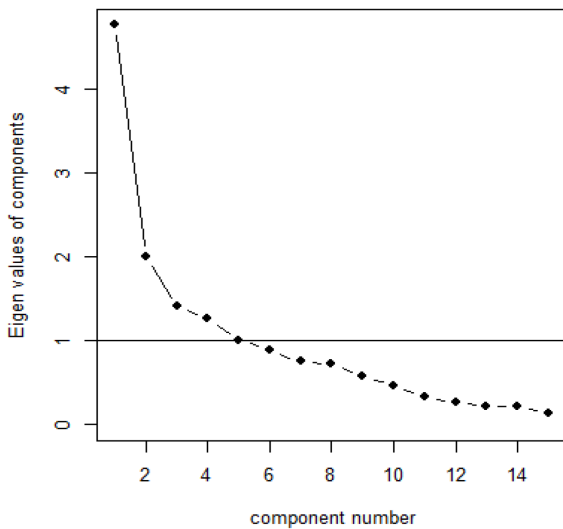


*This figure shows a scree plot that helps visualize the relative importance of the factors, a sharp drop over the horizontal line in the plot signals that subsequent factors are ignorable, so it shows that only considering 5 factors can have an explanation of 69.5% of the variance of the model.*

Table 6: Explanation of the Variances of the Principal Components of Professors Group

| Item | F1 | F2 | F3 | F4 | F5 |
|---|---|---|---|---|---|
| Weights SS | 3.208 | 2.060 | 1.888 | 1.787 | 1.496 |
| ProportionalVariance | 0.214 | 0.137 | 0.126 | 0.119 | 0.100 |
| *Cumulative Variance* | *0.214* | *0.351* | *0.477* | *0.596* | *0.696* |

*This table shows the variance explanation of the principal components of Professors group. The third row represents the individual variance for each of the 5 factors and in the fourth row the accumulated variance of the factors is presented. The intercept of column F5 and Variance Cumulative variance is 0.696 which represents 69.5% explained variance.*

Confirmatory Analysis of the Three Subgroups: Students 1, Students 2, and Professors

To resolve the working hypothesis, Manova multivariate variance analysis was performed among the three subgroups. The alternate hypothesis affirmed differences in the averages of the three subgroups under study. The results of this analysis are in Table 7. The table is divided into four sections: a, b, c, and d. Section A of the table corresponds to the results of the Manova analysis among the subgroups of Students1 and Students 2. We observe the *p value* = 2.2 x$10^{-16}$ is much smaller than the level of significance for this research which has been (0.05), therefore, it was recommended to accept the alternate hypothesis, and can be affirmed that significant statistical differences exist among these two subgroups. Section B of the table corresponds to results of the Manova analysis between Students 1 and Professors. The value of *p* of 5.22 x $10^{-13}$ affirms that significant statistical differences exist between these two subgroups. In section, C, which corresponds to Students 2 vs. Professors the p- value is minimal. It confirms that significant differences exist between these two groups under study. Finally, the alternate hypothesis was accepted. Through the general Manova Analysis to the three subgroups because its *p-value* is on the order pf 2.20 x $10^{-16}$, which is a subtle value compared to the level of significance in the study.

Table 7: Manova for Three Subgroups Students 1, Students 2, and Professors

| A. Students 1 Vs. Students 2 | | | | | | |
|---|---|---|---|---|---|---|
| | **Df** | **Pillai** | **Approx F** | **# Df** | **Den Df** | **Pr(>F)** |
| as.factor(gr) | 1 | 0.6606 | 29.715 | 15 | 229 | <2.20E-16 |
| Residuals | 243 | | | | | |
| **B. Students 1 Vs. Professors** | | | | | | |
| | **Df** | **Pillai** | **Approx F** | **# Df** | **Den Df** | **Pr(>F)** |
| as.factor(gr) | 1 | 0.4051 | 7.7175 | 15 | 170 | 5.22E-13 |
| Residuals | 184 | | | | | |
| **C. Students 2 Vs. Professors** | | | | | | |
| | **Df** | **Pillai** | **Approx F** | **# Df** | **Den Df** | **Pr(>F)** |
| as.factor(gr) | 1 | 0.2792 | 4.9317 | 15 | 191 | 4.05E-08 |
| Residuals | 205 | | | | | |
| Third Sub-groups Manova | | | | | | |
| | **Df** | **Pillai** | **Approx F** | **# Df** | **Den Df** | **Pr(>F)** |
| as.factor(gr) | 2 | 0.67043 | 10.186 | 30 | 606 | 2.20E-16 |
| Residuals | 316 | | | | | |

*This table shows the results of Manova. Section A corresponds to the subgroups Students1 and Students 2, with a p value = 2.2 x$10^{-16}$ and a level of significance of 0.05. Section B corresponds to Students 1 and Professors. A p-value of 5.22 x 10-13 affirms that significant statistical differences exist between these two subgroups. Section C, is Students 2 vs. Professors and as stated its p- value is minimal, confirming that significant differences exist between these two groups. In section D the alternate hypothesis accepted for the three subgroups because its p-value is 2.20 x $10^{-16}$, less than 0.05.*

In addition to the previous statistical evidence, there were noticeable differences in corresponding values among the vectors' averages. Table 8 represents the values of the standards corresponding to each group's analysis. It considered as X1, X2, and X3 to the vectors of the average values in the subgroups Student1, Students 2, and Professors respectively. The last three columns in Table 8 correspond to the values of the standard deviation of the mean vectors.

Table 8: Values of Vectors' Averages and Standard Deviations of the three Subgroups

| Variable | mX1 | mX2 | mX3 | sX1 | sX2 | sX3 |
|---|---|---|---|---|---|---|
| V1 | 3.24 | 3.41 | 3.2 | 0.86 | 1.07 | 1.13 |
| V2 | 3.59 | 4.32 | 4 | 0.81 | 0.67 | 1.16 |
| V3 | 3.77 | 4.07 | 3.99 | 0.94 | 1.12 | 1.2 |
| V4 | 3.92 | 4.56 | 3.86 | 0.83 | 0.64 | 1.11 |
| V5 | 3.86 | 4.54 | 4.55 | 0.66 | 0.63 | 0.64 |
| V6 | 3.79 | 4.72 | 4.5 | 0.75 | 0.54 | 0.67 |
| V7 | 4.33 | 4.77 | 4.58 | 0.66 | 0.56 | 0.72 |
| V8 | 4.28 | 4.9 | 4.58 | 0.59 | 0.3 | 0.62 |
| V9 | 4.21 | 4.68 | 4.35 | 0.54 | 0.57 | 0.9 |
| V10 | 4.16 | 4.56 | 4.42 | 0.64 | 0.71 | 0.76 |
| V11 | 4.01 | 4.55 | 4.58 | 0.89 | 0.71 | 0.76 |
| V12 | 3.74 | 4.72 | 4.38 | 1.02 | 0.48 | 0.92 |
| V13 | 3.54 | 4.29 | 3.53 | 0.78 | 0.95 | 1.26 |
| V14 | 3.78 | 4.57 | 4.14 | 0.64 | 0.57 | 0.8 |
| V15 | 3.79 | 4.65 | 4.32 | 0.9 | 0.65 | 0.97 |

*This Table shows the following: the first three column represents the mean values of the vectors groups as mX1, mX2, and mX3 that corresponds the subgroups Student1, Students 2, and Professors respectively. The last three columns correspond to the values of the standard deviation of each mean vectors.*

## CONCLUSIONS AND LIMITATIONS

The goals of this study were to; (i) Evaluate and categorize the different skills, competencies, and individual traits that researchers should have in a knowledge-based economy; (ii) Use multivariate analysist to explore, and confirm the main factors and the relevance of the skills and competencies identified. To achieve the study purpose we administered a survey of 15 questions. The research conducted between 2010 and 2011 obtained a sample of 319 participants. The analyses performed were multivariate statistical analysis techniques, factor analysis and cluster analysis utilized for the exploratory part and confirmatory analysis.

The conceptualization is that investigators "must be aware that the results should adjust to change and add value to the economy and society and have the ability to search for funding to finance their investigations." This result is an important finding of the subgroup Student 1. The following factor of importance this group considered was that the results should "be converted into public good, be internationalized, and assist in the development of the Economy and Society." For this third factor, investigators should "have technological knowledge, investigate within a practical approach, and be respectful of intellectual property. These three primary factors added up to a 44.4% of the variance of the model and an accumulated 67% of the proportion of the 5 elements.

Subgroup b) Students 2 identified, and the first factor with greater explained variance, that investigators, "must be aware that the results should adjust to change and add value to the Economy and Society and eventually become entrepreneurs." The second factor of importance in this group was that investigators should "have a well-developed technological infrastructure, be multidisciplinary, and have the ability to search for funds to investigate. Finally, by the third factor, results should "be converted into public good, and be internationalized". These three primary factors added up to a 44.4% of the variance of the model and an accumulated 69.5% in proportion to the 5 elements.

Professors were the third subgroup in which the greatest explained variance was for the variable: "should be multidisciplinary, practical, and their investigation results should be internationalized, and add value to the economy and society along with the quality of life." The second factor of importance that was that investigators should "have a good technological infrastructure manage efficiently the basics of technology to contribute to the development of the economy and society". The last and third factor has to do with how investigators should "respect intellectual propriety, accept change, and be able to search for funding to

investigate." These three factors add up to 44.4% of the variance of the model and an accumulated 69.5% in proportion to the 5 elements.

As the findings revealed, to have an productive and efficient research performance, research's results; should have an impact to the local and global economy as well as society (V15, V3, and V12), researchers work should adjust to change (V14), researcher need to search for funding (V13), and be multidisciplinary and innovative (V7 and V8). Finally, this investigation found differences in the values of the average vectors in the variables between the three groups. Thus, there exist different categories of each subgroup's analysis that could be due to their academic formation or their experience with the research topic.

The findings contribute to the proposed model or framework describe in Figure 4, which can guide the development of additional skills and support different individual's characteristics for the improvement of researchers work. Perhaps the most important aspect of competency models is that they align HR systems across the organization. This includes recruitment, selection, hiring, training, performance management, compensation through development and training of employees. The framework suggests that to achieve development, and strengthening of the investigative work, it needs the support and collaboration of three areas: the private sector, universities, and Government.

The quality of academic research depends greatly on strengthening existing units of research, funding, accreditation and the extension of postgraduate's opportunities with relevance in the creation of knowledge (Andrés et. al., 2015). Research, of any kind should contribute to the growth of global, regional, and local knowledge. Currently, differences between these two scopes is perceptible variables of cultural accommodation, and its tenets and discoveries must allow greater equity between people and accelerated progress of the well-being of societies (Gurrola et.al, 2015; Hossain, 2015). From this point of view, the findings of this research have implications for academics that pursuit a research career, human resources managers in universities, and the government.

Figure 3: Academic Researcher's Development Framework
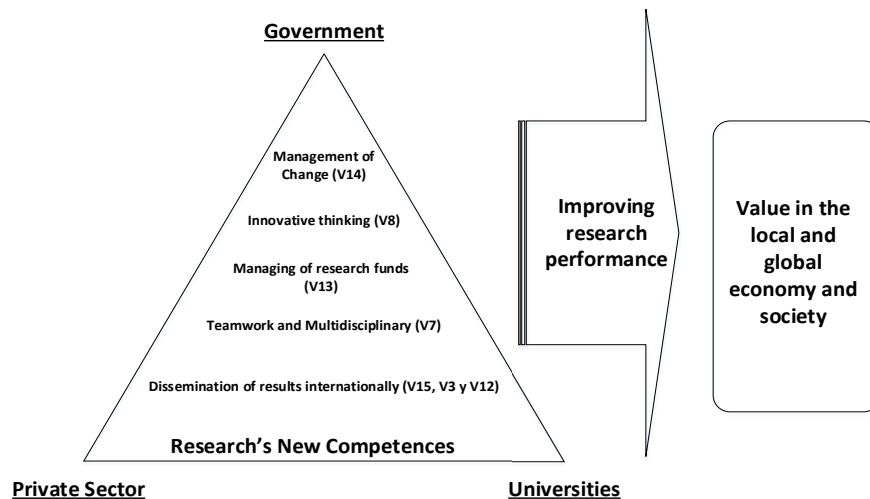


*This figure describes a framework suggested to achieve the development and strengthening of the investigative work. It needs the support and collaboration of three areas in particular: the private sector, the universities and the Government.*

For the academic researcher the results imply the development and strengthening of skills that perhaps are not considered so important for research development because they are not related to technical skills. Researchers should develop aspects related to social skills to complement their work. Skills needed to collaborate with other researchers in or out of universities, a global vision to perceive changes in social

preferences, and be a good administrator to manage successfully his work. The goal is to transcend the boundaries of universities to influence society and in particular, the country's economy. This is interesting because is not the way academics in general work. In many universities, knowledge developed, or intellectual production stay within the university or are shared only with other academics, professionals, organizations, or associations. Rarely, do these intellectual productions transcends to the rest of society and the government. In that sense, the results of this investigation serve as a roadmap for research that wants to succeed and recognize as a knowledge worker.

At the institutional level, such as universities and research centers and the managers in areas such as human resources, our results provide a roadmap that allows the establishment of new models of competencies or a framework for scholars and academic researchers work and incentive systems. More important, the results suggest that human resource managers in academic institutions need to revisit academic job descriptions and specifications. A job description outlines the primary duties and responsibilities of a given position in a company, while a job specification outlines the qualities and qualifications (knowledge, skills, abilities, competencies) required of someone in the role. Both are useful in practices such as recruitment and selection, training and development, incentive and compensation systems. Abu Said (et al. 2015), prove there is a significant relationship between the effect that has organizational support and the successful academic.

Human resources managers and university managers in general will be more effective in finding opportunities and establishing career paths for academic researches as knowledge workers. It also allows universities to have new elements of judgment when recruiting or inviting researchers or establishing professional development policies to address the knowledge worker for a more efficient and practical research performance. The results serve as a framework for the development of incentives that allow universities and research centers to promote behaviors specifically desired, and multidisciplinary approaches to add value to the result of an investigation. This is why the creation of incentives should aim at foster collaboration between disciplines and not stifle it (Tan, 2016). Research collaboration occurs within institutions (across disciplines) and across different sectors (academia and industry, for example). In today's knowledge economy and global scenario, collaboration emerges to meet professional, political, economic, and social demands. The growing importance of interdisciplinary fields and various external forces have given rise to intra-institutional and even inter-sector collaborations that allow knowledge to be pooled and transferred (Brew & Lucas, 2009). Is important that human resources managers and universities management establish evaluation systems that consider this multidisciplinary approach and provide the means to achieve it.

Government involves an opportunity to improve its national competitiveness at the global level. Governments should strengthen the initiatives of results' dissemination at a local level and achieving greater global exposure on the work completed. Governments should promote initiatives and incentives to create greater mobility in researchers. This is important because mobility to other countries can help improve our work and bring back to our society a professional that not only works well but his work is of value for the development of the local economy. Another goal is to develop initiatives in which the academic work becomes a focal point to attract and retain talents and other knowledge workers. For countries seeking to become a knowledge-based economy, this implies identifying the best education systems that integrate work skills necessary for the development of knowledge worker. Four pillars of the Knowledge Economy Framework (World Bank, 2009) are established include an economic incentive and institutional regime that provides permit efficient mobilization and allocation of resources and stimulates creativity and incentives for the efficient creation, dissemination, and use of existing knowledge. In addition, governments should develop educated and skilled workers who can continuously upgrade and adapt their skills to efficiently create and use knowledge. These strategies help create a consciousness in the people, that knowledge and intellectual work generated through research in universities can and should influence society and contribute to the economic growth of a country.

This study has limitations. The first limitation refers to the poor comprehension of the participants about the concept of knowledge economies. The second limitation relates to the lack of cooperation of many academics to participate and complete the questionnaire. Further investigations can be directed to researchers only and expand to other countries to see if cultural difference impacts the view of work, competencies and individual skills of an academic researcher in a knowledge- based economy.

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