

The Effect Of Supplier Selection On Product Quality Management In Organizations. A Case Study Of Uganda Wildlife

Life

1 Kulabako Faridah, 2 Dr Ariyo Gracious Kazaara, 3 Asimwe Isaac Kazaara

1 Metropolitan International University, 2 Lecturer Metropolitan International University, 3 Lecturer Metropolitan International University

Abstract: *The following goals were the driving forces behind the study, which investigated the connection between problem recognition and quality of product control at the Uganda Wildlife Authority, the connection among criteria preparation and quality control governance at Uganda Wildlife Authority, and the connection between supplier quality leadership in businesses with a case study of Uganda wild life. Correlation analysis results demonstrate the link between problem detection and quality control management. Thus, the results showed that problem identification and product quality management in UWA had a high positive link that was statistically significant ($r= 0.828$; $p 0.000$). The investigator presents the following suggestions for the Uganda Wildlife Authority: issue assessment, which had the lowest average among the components, needs to receive more attention from UWA management. It is impossible to ignore the importance of problem recognition in enhancing product quality management. An advantage of proper identification of problems is the acquisition of high-quality product that directly addresses the requirement that is determined within the company.*

Keywords: supplier selection and product quality management

Background of the study

In the late 1960s, choosing a supplier was carefully considered to be significant and more than a routine administrative task. Additionally, it is projected that 50% of businesses worldwide engaged in managing supplier relations efforts as part of their usual procurement processes (Simpson et al., 2002; Prahinski and Benton, 2004). This is in keeping with the worry expressed by the majority of purchasing organizations regarding the expectations of the company's products and services in relation to the enhancement of their effectiveness (Krause and Ellram, 2007).

The knowledge that around 60% of government spending goes toward public procurement led to a rise in interest in supplier selection. It was intended that the government would optimize value realization from purchased goods and services by adhering to best supplier selection procedures (Monczka & Handfield & Giunipero & Patterson, 2011). From a global perspective, strategic sourcing entails the processes used to assess the capabilities of possible suppliers before choosing them to set up a homeowner's supply chain for long-term competitive edge (Tracey, 2009). As businesses depend more and more on their providers, it is important to choose the right ones because their capabilities are important for the growth of the purchaser's own abilities and effectiveness. For instance, Gonzalez and Quesada (2004) discovered that the most important supply administration approach to accomplishing product quality was supplier selection. The ability of a company to develop or improve its own capability in a strategically significant domain, such as excellence, by utilizing supplier relationship in quality, meanwhile, may depend on more than just its capacity to choose a supplier. Successful supplier selection is a source for competitive advantage; they affect competitive performance of organizations positively if effectively selected (Petersen, 2005).

Problem statement

Due to cancellations, insurance expenses, and stocking adjustments, choosing the wrong suppliers can result in millions of dollars in losses for the company and do irreparable harm to their names and future sales prospects (Beil & Ross, 2009).

This was demonstrated in the case of the 222/UWA/CC/2014 meeting of the UWA Contracts commission, which authorized firms for the installation of 300 perimeter markers/pillars within in the Pian Upe Wildlife reserve.

On February 25, 2015, Ms. Akwang United Brothers Ltd. was chosen as the Best Evaluated Bidder and given a formal, fully executed arrangement or contract.

Later on, a 25% advance payment worth UGX 20,146,550 was given to the company. To UWA's disappointment, the chosen firm ultimately decided against performing the work and did not uphold their commitments under the arrangement to produce the correct quality of works at the correct prices in the right amount of time.

The Auditor General's Performance Reviews Report further states that disagreements and poor management of product quality have persisted in UWA (2016).

Objectives of the Study

1. To examine the relationship between problem identification and product quality management in Uganda Wildlife Authority.
2. To assess the relationship between criteria formulation and product quality management at Uganda Wildlife Authority.
3. To analyze the relationship between supplier qualification and product quality management at Uganda Wildlife Authority.

Hypothesis of the study

Ho: There is no relationship between problem identification and product quality management at Uganda Wildlife Authority

Ha: There is a relationship between problem identification and product quality management at Uganda Wildlife Authority

Ho: There is no relationship between criteria formulation and product quality management at Uganda Wildlife Authority

Ha: There is a relationship between criteria formulation and product quality management at Uganda Wildlife Authority

Ho: There is no relationship between supplier qualification and product quality management at Uganda Wildlife Authority

Ha: There is a relationship between supplier qualification and product quality management at Uganda Wildlife Authority

Research Questions

1. What is the relationship between problem identification and product quality management at Uganda Wildlife Authority?
2. What is the relationship between criteria formulation and product quality management at Uganda Wildlife Authority?
3. What is the relationship between supplier qualification and product quality management at Uganda Wildlife Authority?

Methodology

Research design

The researcher applied a case study strategy that concentrated on a single entity and combined both qualitative and quantitative inquiry methods.

Only Uganda Wildlife Authority staff were chosen for the study in order to emphasize a thorough and in-depth contextual investigation of fewer occurrences and their interplay, therefore the case study approach was appropriate (Yin, 2009).

A case study research approach is based on a pragmatic, logical, and organized organization of the study area and theory testing, according to Cooper and Schindler (2008).

Yin, (2012). (2012).

The adoption of a cross sectional research design also contributed to the collection of foundational information, such as age and gender, that would support future research and experimentation. **Population**

Population refers to total sum of all people, elements from which a sample is to be selected or it is full number of elements to which the results were applied or generalized (Lokesh, 2003). It therefore refers to all cases targeted for study. Therefore, the study population of 65 included the procurement staff, contracts committee members, sub contracts committee members and top management staff.

Sample Size and selection

The study targeted 60 respondents where 14 procurement staff who were primary respondents, 5 contracts committee members, 32 sub contracts committee members and 9 top management staff. These was determined using Krejcie and Morgan (1970) as reported in Amin (2005) as shown in table 1 below.

Table 1: Showing the Sample Size

| Category of the Respondents | Population | Sample Size | Sampling technique |
|-----------------------------|------------|-------------|--|
| Procurement staff | 15 | 14 | Simple random sampling with replacements |
| Contracts Committee | 5 | 5 | Purposive sampling |
| Sub contracts committee | 35 | 32 | Disproportionate stratified sampling |
| Top management staff | 9 | 9 | Purposive sampling |
| Total | 65 | 60 | |

Source: Will adopt from Krejcie and Morgan (1970) as cited in Amin (2005).

From the above respondents basing on the table for determining the sample size of NEA (December, 1960), at least 60 respondents were considered as the sample size.

Sample selection Techniques

Simple random sampling with replacement is the technique whereby every member of the population has an equal and independent chance of being selected to participate in the study. Random sampling was used to select other staff of the organization from the different strata. This is because not all of the staff was involved in the study, so this gave equal chances of attaining the views from respondents to conclude to the generalization from the findings (Lokesh, 2003).

Data Collection Tools

Research instruments or measurement scales simply mean devices for measuring the variables of interest and can be in the form of questionnaire forms comprising single items (questions), batteries of single items or scales of items which can be scored or observational schedules, structured diaries or log books or standard forms for recording data from records' (Bowling, 2002).

Interview Guide

Due to their ability to help researchers gather qualitative data regarding a particular topic, interviews are regarded as primary data (Saunders, 2012).

Face-to-face interviews were used for every single interview.

Face-to-face interviews were done to gather qualitative data using an interview guide (Mugenda & Mugenda, 1999).

The contractual committee (CC), top management (TM), and account managers were among the five (5) interviewees who served as key informants. All of their opinions were recorded for future use.

15-20 minutes were allotted for the interviews, although several participants requested anonymity.

As underlined by Saunders et al., this form of data collecting assisted in the triangulation of data from many different sources in order to evaluate the outcomes for similarity and reliability (2003). **Data Analysis and**

Presentation

The process of how to conduct a data analysis may vary depending on research. Nevertheless, the aim of the data analysis was to interpret data and draw meaning from it (Saunders et al., 2012).

In order to answer the research questions presented in this proposal as well as formulate conclusions, a data

analysis was a necessity.

Quantitative Data Analysis

The comprehensiveness and precision of data gathered from closed-ended information gained Supplier selection and product quality analysis of variance were verified.

The collected information was categorized, coded, and then entered into excel spreadsheets and SPSS (Statistical Package for Social Sciences in Research) software for analysis of the relationships between the variables.

The correlation between supplier evaluation and quality of product control was assessed using the Pearson correlation coefficient.

Qualitative analysis of data

This kind of information was explained and supported by candid feedback from the field (Mugenda and Mugenda, 2003).

To investigate the connection between strategic sourcing and quality of product administration in UWA, findings were drawn while examining qualitative data under several topics and how they interrelated.

RESULTS

Respond rate

Sixty (60) respondents selected to participate in the study were issued with questionnaires out of which 58 were fully filled and returned. The overall response rate was 58 out of 60 which is equivalent to 96.7%. The researcher also interviewed 5 respondents to supplement data from the questionnaires. A response rate of 40%+ is acceptable as representative of the sampled population (Mugenda & Mugenda, 2008). In this regard, a respond rate 90% was adequate and excellent for the study result to be valid.

Gender of the respondents at Uganda Wildlife Authority

Table 2: Gender of respondents at Uganda Wildlife Authority

| Gender of respondents | | | | | |
|-----------------------|--------------|-----------|------------|---------------|-------------------|
| | | Frequency | Percent | Valid Percent | CumulativePercent |
| Valid | Female | 31 | 53.4 | 53.4 | 53.4 |
| | Male | 27 | 46.6 | 46.6 | 100 |
| | Total | 58 | 100 | 100 | |

Source: Primary data

As reflected in table 2 above, the most of the respondents in Uganda Wildlife Authority were males (31) represented by 53.4% as compared to the (27) female respondents, represented by 46.6%. This implies that the males dominated most of the positions held in Uganda Wildlife Authority and were more willing to respond to questionnaires provided.

Age bracket of respondents at Uganda Wildlife Authority

Table 3: Age bracket of the respondents at Uganda Wildlife Authority

| Age of respondents | | | | | |
|--------------------|--------------|-----------|------------|---------------|-------------------|
| | | Frequency | Percent | Valid Percent | CumulativePercent |
| Valid | 20-25 | 8 | 13.8 | 13.8 | 13.8 |
| | 26-30 | 14 | 24.1 | 24.1 | 37.9 |
| | 31-35 | 11 | 19 | 19 | 56.9 |
| | 36-40 | 18 | 31 | 31 | 87.9 |
| | 41 & Above | 7 | 12.1 | 12.1 | 100 |
| | Total | 58 | 100 | 100 | |

Source: Primary data

The results in table 3 show majority of 31% (18) were within the age bracket of 36-40. This was followed by those that fall under the age bracket of 26-30, they were (14) and represented by 24.1%, those under the age bracket of 31-35 were (11) and were represented by 19%, those under the age bracket of 41 & above were (7) and were represented by 12.1% and finally those that were 20-25 were (8) and were 13.8%. This implies that the study involved different respondents with varying ages which provided the researcher with current and longtime information about supplier selection and product quality management in Uganda Wildlife Authority.

Level of education of respondents at Uganda Wildlife Authority**Table 4: Level of education of the respondents at Uganda Wildlife Authority**

| Education Background | | | | | |
|----------------------|-------------------|-----------|------------|---------------|-------------------|
| | | Frequency | Percent | Valid Percent | CumulativePercent |
| Valid | Diploma | 4 | 6.9 | 6.9 | 6.9 |
| | Bachelor's Degree | 24 | 41.4 | 41.4 | 48.3 |
| | Master's Degree | 30 | 51.7 | 51.7 | 100 |
| | Total | 58 | 100 | 100 | |

Source: Primary data

Table 10 above findings show that majority of the respondents (30) who are represented by 51.7% were university graduates with a Master's Degree. This was followed by the university graduates with a Bachelor's Degree who were (24) and represented by 41.4%. The respondents with a Diploma qualification were only (4) and represented by 6.9%. This explains the high level of competences in the academic path within Uganda Wildlife Authority. The implication of the above findings is that the majority of the respondents was elites and therefore more informed about the variables under investigation which helped to obtain reliable information.

Position held by respondents at Uganda Wildlife Authority**Table 5: Positions held by respondents at Uganda Wildlife Authority**

| Position held in UWA | | | | | |
|----------------------|----------------------|-----------|------------|---------------|-------------------|
| | | Frequency | Percent | Valid Percent | CumulativePercent |
| Valid | Senior management | 14 | 24.1 | 24.1 | 24.1 |
| | Middle management | 22 | 37.9 | 37.9 | 62.1 |
| | Lower management | 17 | 29.3 | 29.3 | 91.4 |
| | Non-managerial staff | 4 | 6.9 | 6.9 | 98.3 |
| | Others | 1 | 1.7 | 1.7 | 100 |
| | Total | 58 | 100 | 100 | |

Source: Primary data

From table 5 above presents the positions held by the respondents in Uganda Wildlife Authority. Based on the above results, the majority of the respondents (22) who are represented 37.9% were under the middle management cluster. This was followed by the respondents under senior management who were (14) and represented by 24.1%. The respondents under lower management who were (17) and represented by 29.3%. The respondents under Non-managerial staff were (4) who are represented by 6.9% and under other category was only (1) and was represented by 1.7%. This therefore implies that information was obtained from different knowledgeable and managerial positions to improve on reliability and adequacy.

Experience of respondents at Uganda Wildlife Authority**Table 6: Experience of respondents at Uganda Wildlife Authority**

| Experience of respondents | | | | | |
|---------------------------|------------------|-----------|------------|---------------|-------------------|
| | | Frequency | Percent | Valid Percent | CumulativePercent |
| Valid | Less than 1 year | 7 | 12.1 | 12.1 | 12.1 |
| | 1-3 years | 14 | 24.1 | 24.1 | 36.2 |
| | 4-6 years | 21 | 36.2 | 36.2 | 72.4 |
| | <6 years | 16 | 27.6 | 27.6 | 100 |
| | Total | 58 | 100 | 100 | |

Source: Primary data

From table 6 above presents the experience of the respondents in Uganda Wildlife Authority. Based on the above results, the majority of the respondents (21) who are represented by 36.2% had 4- 6 years" experience. This was followed by the respondents that had more than 6 years" experience who were (16) and represented by 27.6%. The respondents with 1-3 years" experience were (14) and represented by 24.1% and lastly the respondents that fall under less than 1 years" experience were only (7) and were represented by 12.1%. This therefore implies that information was obtained from respondents with desirable statistics in regard to supplier selection and product quality management matters due to their high level of experience.

Problem Identification at Uganda Wildlife Authority

In a bid to examine the findings on the first objective, which was to diagnose the relationship between problem identification and product quality management in Uganda Wildlife Authority; respondents provided their views in relation

to the extent to which they; strongly disagree (1), disagree (2), neutral (3), agree (4) and strongly agree (5). This was presented and analysed in the table below; the interpretation of the results is based on based on mean and standard deviation.

Table 7: Problem identification and product quality management at Uganda Wildlife Authority

| Problem identification and product quality management | Scale | Freq | % | Mean | Std. Dev |
|--|-------------------|------|------|------|----------|
| Before a product is procured at Uganda Wildlife Authority, the user department meets and identifies the problem (need). | Strongly disagree | 5 | 8.6 | 4.07 | 1.212 |
| | Disagree | 2 | 3.4 | | |
| During problem identification at Uganda Wildlife Authority, the user department makes consultation from technical personnel. | Strongly disagree | 4 | 6.9 | 3.98 | 1.207 |
| | Disagree | 4 | 6.9 | | |
| | Neutral | 6 | 10.3 | | |
| Before procuring products at Uganda Wildlife Authority, the nature (type and | Strongly disagree | 5 | 8.6 | 3.93 | 1.183 |
| | Disagree | 2 | 3.4 | | |
| size) of the product to be procured is put into consideration. | Neutral | 6 | 10.3 | | |
| | Agree | 24 | 41.4 | | |
| | Strongly agree | 21 | 36.2 | | |
| During problem identification at Uganda Wildlife Authority, the user department liaises with the Procurement and Disposal Unit for procurement counsel. | Strongly disagree | 4 | 6.9 | 3.86 | 1.220 |
| | Disagree | 5 | 8.6 | | |
| | Neutral | 8 | 13.8 | | |
| Whilst carrying out problem identification at Uganda Wildlife Authority, the user department carries out market survey to seek more knowledge and expertise. | Strongly disagree | 2 | 3.4 | 4.14 | .907 |
| | Disagree | 1 | 1.7 | | |
| | Neutral | 5 | 8.6 | | |
| | Agree | 29 | 50 | | |
| Whilst carrying out problem identification at Uganda Wildlife Authority, the PDU and user | Strongly disagree | 9 | 15.5 | 3.83 | 1.365 |

| | | | | | |
|---|-------------------|----|------|------|------|
| department put into account collection of feedback from the consumers of similar products in the organisation. | Disagree | 1 | 1.7 | | |
| | Neutral | 2 | 3.4 | | |
| | Agree | 25 | 43.1 | | |
| Whilst carrying out problem identification at Uganda Wildlife Authority, the PDU and user department put into account the aspect of economies of scale. | Strongly disagree | 2 | 3.4 | 4.10 | .892 |
| | Disagree | 1 | 1.7 | | |
| | Neutral | 5 | 8.6 | | |
| | Agree | 12 | 20.7 | | |
| | Strongly agree | 46 | 79.3 | | |

Source: Primary data

The association between problem recognition and quality of product control at Uganda Wildlife Authority is examined in Table 7 above.

With just an average mean of 3.996 and a standard deviation of 1.0754, the results demonstrated a high level of agreement about the connection between problem recognition and quality of product management.

This was ascribed to the following proactive responses;

The user department at Uganda Wildlife Authority meets to discuss the issue or requirement before purchasing a product (Mean = 4.07, S.D = 1.212);

Before purchasing products at Uganda Wildlife Authority, the nature (type and size) of the product to be purchased is taken into consideration (Mean= 3.93, S.D= 1.183); When identifying problems at Uganda Wildlife Authority, the department consults with technical experts (Mean= 3.98, S.D= 1.207) . The user department contacts the Purchase and Disposal Unit for procurement advice during problem definition at Uganda Wildlife Authority (Mean: 3.86, S.D: 1.220); the user team conducted a market research during problem definition at Uganda Wildlife Authority to gather additional knowledge and expertise; and during identification of the problem at Uganda Wildlife Authority, the PDU and user department take into consideration.

Criteria Formulation at Uganda Wildlife Authority

Inferential Statistical Analysis

Pearson Correlation Coefficient was used to measure relationships that existed among the two study variables and their constructs.

Correlation analysis between problem identification and product quality management

To test if there was a significant relationship between problem identification and product quality management at UWA, a correlation analysis was conducted using Pearson’s correlation coefficient and significance statistics and the findings are in the table below

Table 8: Correlation Matrix between Problem identification and product quality management

| Problem identification | Product quality management | | |
|------------------------|----------------------------|--------|--------|
| Problem Identification | Pearson Correlation | 1 | .828** |
| | Sig. (2-tailed) | | .000 |
| | N | 58 | 58 |
| Supplier performance | Pearson Correlation | .828** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 58 | 58 |

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

Source: Primary data

Ho: There is no relationship between problem identification and product quality management at Uganda Wildlife Authority

Ha: There is a relationship between problem identification and product quality management at Uganda Wildlife Authority

Table 16 above's findings from correlation analyses demonstrate the link among problem detection and quality management.

Thus, the results showed that problem diagnosis and product quality management in UWA had a high positive link that was statistically significant ($r = 0.828$; $p = 0.000$).

Regarding the interviews, one respondent from senior management who had been employed by UWA for more than six years noted the following:

Correlation analysis between Criteria formulation and product quality management

Table 9: Correlation between criteria formulation and product quality management

| Criteria Formulation | Product quality management | | |
|----------------------------|----------------------------|--------|--------|
| Criteria Formulation | Pearson Correlation | 1 | .851** |
| | Sig. (2-tailed) | | .000 |
| | N | 58 | 58 |
| Product quality management | Pearson Correlation | .851** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 58 | 58 |

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

Source: Primary data

Ho: There is no relationship between criteria formulation and product quality management at Uganda Wildlife Authority

Ha: There is a relationship between criteria formulation and product quality management at Uganda Wildlife Authority

The correlation analysis findings in the table 17 above show the relationship between criteria formulation and product quality management. The findings hence revealed that there was a strong positive relationship between criteria formulation and product quality management in UWA which was statistically significant ($r = 0.851$; $p < 0.000$).

Correlation analysis between Supplier qualification and product quality management

To test if there was a significant relationship between supplier qualification and product quality management at UWA, a correlation analysis was conducted using Pearson’s correlation coefficient and significance statistics and the findings are in the table below.

Table 10: Correlation Matrix between Supplier qualification and product quality management

| | Supplier qualification | Product quality management |
|----------------------------|------------------------|----------------------------|
| Supplier qualification | | |
| Product quality management | | |
| Pearson Correlation | 1 | .855** |
| Sig. (2-tailed) | | .000 |
| N | 58 | 58 |
| Pearson Correlation | .855** | 1 |
| Sig. (2-tailed) | .000 | |
| N | 58 | 58 |

Ho: There is no relationship between supplier qualification and product quality management at Uganda Wildlife Authority

Ha: There is a relationship between supplier qualification and product quality management at Uganda Wildlife Authority

The correlation analysis findings in the table 13 above show the relationship between supplier qualification and product quality management. The findings hence revealed that there was a strong positive relationship between supplier qualification and product quality management in UWA which was statistically significant ($r = 0.855$; $p < 0.000$).

In regard to interviews conducted, one of the respondents who had worked with UWA for over 6 years and coming from the top management level noted that:

Conclusions

The researcher came to the following conclusions based on the findings above: the respondents strongly agreed that there was a significant positive connection between identification of problems and product quality management in Uganda Wildlife Authority; the respondents strongly agreed that there was a significant beneficial connection between requirements formulation and product quality strategic planning in UWA; and the respondents strongly agreed that there was a strong positive relationship between supplier qualification and product quality management in UWA.

Last but not least, it was discovered that the respondents overwhelmingly concurred that there is a strong beneficial association between supplier selection and product quality management in UWA.

Other factors, such as contract management, etc., can be blamed for the strong positive association between supplier selection and product quality management.

Recommendation of the study

The researcher proposes the following changes for the Uganda Wildlife Authority: issue assessment, which had the lowest mean among the components, needs to receive more attention from UWA management.

It is impossible to ignore the importance of problem identification in enhancing product quality management.

An advantage of proper identification of the problem is the acquisition of high-quality product that directly addresses the requirement that is determined within the company.

This suggests that it is a consideration that is not fully taken into account when choosing suppliers in UWA.

Yet, the creation of criteria aids in the clear description of the guidelines or standards that will be followed when choosing feasible suppliers, and as a result, the creation of criteria exhaustively explains the time required for the job to be finished, so decreasing it.

REFERENCES

Al Manaseer, E. (2013). Development of Risk Management Model for Public Tenders.

Amin, M.E. (2005). Social science research; conception methodology and analysis. Kampala: Makerere University Printery.

Asamoah D, Annan J& Nyarko S.(2012)- AHP Approach for Supplier Evaluation and Selection in a Pharmaceutical Manufacturing Firm in Ghana- International Journal of Business and Management.

Aylesworth, R.M. (2003). Using Agency theory to model Cooperative Public Purchasing.

Beil, D. and Ross, M. (2009). Effects of supplier selection process on Post contract product quality management.

Berjis, P. (2012). *Effectiveness of Prequalification Practices in Public Procurement* (Doctoral dissertation).

Boer, L., der Wegen, L., and Telgen, J. (1998). Outranking methods in support of supplier selection. European Journal of Purchasing and Supply Management.

Busenitz, S. (2003) "Use of strategic approach to procurement of goods and services in Kenya Public universities". Nakuru Kenya. COMESA Public.

De Boer et al. (2001). Supplier selection for development of Petroleum Industry Facilities, applying multi-criteria Decision making techniques.

Donaldson, J. V. (2000). Perceptions of success in performance-based procurement: Differences between clients and contractors. *Construction innovation*, 15(1), 107-128.

Ekaterina, J., (2014). Attitudes towards Health and Safety: A Quantitative Survey of Stakeholder Opinion.

Enyinda, C I., Dunu E., Gebremikael F. (2010). An analysis of strategic supplier selection and evaluation in a generic pharmaceutical firm supply chain, Volume 17.

Garry (1994). An analysis of Vendor selection system and decisions.

Gonzalez, N. & Quesada, P., (2004). Understanding Reliability and Validity in Qualitative Research.

Handfield, R. B., & Nicholas, E. L. Jr (1998). *An introduction to supply chain management*. Upper saddle river, NJ: Prentice Hall.