The Role of Marketing Information Systems (MKIS) in Price Change Decision Making in Ethiopian Industries

EshetieBerhan
Department of Mechanical Engineering,AAiT, AAU,
Addis Ababa, Ethiopia
eshetie_ethio@yahoo.com

BirhanuBeshah
Department of Mechanical Engineering,
AAiT, AAU,
Addis Ababa, Ethiopia
birhanu.beshah@aait.edu.et

Daniel Kitaw
Department of Mechanical Engineering,
AAiT, AAU,
Addis Ababa, Ethiopia
danielkitaw@hotmail.com

Abstract—**Marketing Information Systems (MKIS) has played a significant role in many areas of marketing activities in today's market. However, the use of MKIS as a tool for marketing decision making practice is a challenge in Ethiopian Industries (IEs). The purpose of this study is to assess whether MKIS supports the marketing activities of Ethiopian industries in particular price change decision making. A research model is developed in relation to MKIS and price change decision activities. The model is then tested using a quantitative survey on randomly selected 42 EIs in the year 2010. The findings of the study show that there is good data acquisition and information processing in most EIs, which indicates the existence of MKIS. However, the MKIS is not used for price change decision making. As a result of this,the role of MKIS on price change decision making activities is not significant. This subsequently affects the effect of price change decision making on the price change outcomes of EIs.**

Keywords-Marketing Information Systems, Price change decision, Price change outcomes, Information processing, Ethiopia, Ethiopian Industries.

I. INTRODUCTION

A price is the most important marketing mix that the business function of any enterprise should consider. Because it is a major and a direct determinant of demand and influences other marketing mix variables. It is also the only element in the marketing mix that creates sales revenue [17,19]. In the current "free market" policy that Ethiopia claimed to follow, Ethiopian Industries (EIs) are challenged a lot to set price for their product or services. A product produced in China or India is sold in the Ethiopian market at a price less than the manufacturing cost of EIs. Due to this reason, EIs are forced to change their price now and then. They faced problems in most of the times as to what basis they can set or change the price of their product. In a price-taking market, setting the price is simple, that is, simply charging the on-going price. But in price making market, the price decision can be very complex and requires up-to-date information that is relevant to the price setting. Without information, managers cannot look ahead and anticipate the future to adapt and set price or make price change decision.This is because; price change decision is a complex practice that requires consideration of many stakeholders such as customers, suppliers, competitors and others. To account these, the need of Information and Communication Technologies (ICT) is indispensable as it is required for other marketing mix-elements.

A price might be considered as a non-tangible attribute of a product. However, it plays a very important role in the lives of the marketers and customers, and deserves as much strategic consideration as any other marketing tools [4, 17, 19]. Price acts as a communication or bargaining tool between customers and marketers. It can be used as a competitive weapon in the market place.

According to *Kotler [17]*, several circumstances may lead a firm to consider cutting or increasing its price. Some of them are price cut- excess capacity, falling market share, drive to dominate the market through lower costs etc. But it wouldn't be considered as simple as increasing or decreasing a penny or a premium percentage at the products'/services' price. Rather it demands decision makers' necessary information so as to take appropriate and timely action [20, 22]. A firm initiating the price change must also anticipate the probable reactions of suppliers, middleman and government [17, 16]. In order to account these, enterprises should gather and store data from various sources and analyze it to get relevant information. For example, in order to understand and take a desirable action to price change initiated by competitors, a firm must anticipate ahead about the competitors' Price Change Decision (PCD) actions. This would only be possible if the firm prominently has a good MKIS as a decision making tool in the marketing functions.

Though marketing mix-elements are so important in marketing practice [5, 26, 27, 30] this study has considered only "price" particularly on PCD and its effect on Price Change Outcomes (PCO). This is due to the fact that in Ethiopia, it is more likely that enterprises are mainly engaged in PCD as compared to other marketing activities. In all or either of the above cases, however, information is treated as an input during the PCD making processes of

Ethiopian industries. In this paper the researchers try to assess the role of MKIS on PCD making in EIs.

This paper is organized as follows: in section II the literature review about price change decision and its relation to MKIS, in section III the research design and methodology, in section IV and V the results and discussions of the quantitative survey are presented and finally in section VI the conclusion is presented.

II. LITERATURE REVIEW

Among the many variables that influence of consumers' behavior and brand choice price is the very important one. Price is also a very important variable for market stability [2] and price reduction has also strong relation with promotion though it does not show a positive consistent effect on promotion [21]. A marketing manager considering a price change would like to anticipate how markets will respond to that change. Market response to price changes is affected by many elements including price sensitivity, competitive intensity, and product characteristics [25].

The phenomena of price adjustments can be considered as a central factor for market clearance in the microeconomic level and a bottom line for profitability at the managerial level. Among the eight stages required to be considered in price change process, information is the first most important in the study of [23]. To this effect, the paper focuses on MKIS. MKIS is a Management Decision Support System tool that enhances the execution of marketing mix-elements in enterprises' marketing functions [6, 31]. With its simple, robust and complete model, MKIS is a back bone for enterprises to communicate with, and support top management decisions *Lilien and Kotler et al. 1996* cited in [31].

Enterprises with good MKIS inputs such as IT-infrastructures, networks and data acquisition points are expected to process data and generate information for marketers. Marketers, based on the information acquired from the system and the knowledge they have, they can make appropriate decision. According to Terrence et.al [28] MKIS should be a tool designed to support management in its marketing-based decision making. This would be realized based on information provided through a linkage with retail scanners, immediate price changes can be made to respond to competitor actions.Therefore, by using the MKIS tools, enterprises can collect data or information about the perception of their customers' toward the value of their products and might be commenced to change their price accordingly. The assumption here is that, enterprises with good MKIS can generate reliable information to marketers for better price decision making.

The dimensions of MKIS include data acquisition (DA), IT infrastructure (ITI), information-processing (IP), and decision making processesin the business functions [6]. For this research the decision making processes considered in the business functionsis the price PCD making. The construct, PCO, includes performance and timeliness outcomes.The data purification and summary of all the constructs are summarized in Table1.In this section a brief descriptions of each of them are given below.

DA: Enterprises may collect data form relevant data collection points. Simple data and information may provide an overview about firms and their competitors [29]. This may depend on the nature and types of enterprise. In general "what you get is only as good as what you put in". The data collections points considered in this research are: customers' satisfaction, competitors' strategies, advertising strategy, suppliers and sales points.*ITI:* is also the other dimension of MKIS. Most MKIS is data based and use high powered computers. This may be influenced by the size of the organization and their resource availability [4].Due to the rapid technological growth of Hardware, its effect is considered to be insignificant. The cost of possessing ITI has to be investigated in depth analysis [3,16]. The collected data has to be processed using ITI to generate information and disseminate it among users for marketing decision. The IP includes information analysis, Information transmission (dissemination), Instrumental utilization processes and Conceptual use [24].

The other construct is PCD making which is illustrated by three parameters namely: cost informed, value informed and competitions informed price change decision, whichare modified and adopted from *Ingenbleek et al. [9]*.*Value-informed price change* is assessing the value of the product/service offering to customers and understanding the customers' perception enterprises may change the price of their products/services. It informs the enterprises about the question: what is the customers' perception of our product/service value? [9, 10]. This can be quantified by assessing the monetary amount that customers are willing to pay for the perceived benefits they will receive if they accept the market offering [9].

The second parameter of PCD is c*ompetition-informed price change.*Enterprises have also gathered information about the actions of competitors on the PCD. This can be obtained on published price list, by mysterious shopper, or other appropriate method. Competition informed price change will inform enterprises how and how much do competitors' change for the perceived benefits they offer [9]. Having been informed and interpreting competitors' price (price action) relative to their market position enables a quantitative assessment of the enterprise's relative position. Enterprises might be encouraged to make slight change (increase or decrease) on their products/services price based on the competition information obtained from the assessment made. The last parameter considered under PCD is c*ost informed price change.* In this regard, enterprises determine the PCD based on the production cost of the product/service and the cost price of the product/service. But if, the competition intensity is higher, the cost informed price change is least important to

enterprises [9]. This is because in the competitive market, the price is determined by the market.

The last construct in the model is PCO. It is measured by two parameters which are adopted from [24]. These are Price change performance and price change timeliness. Price change performance is the degrees to which enterprises involve in PCD that would produce PCO such as profits, returns, sales volume, and market share. However, the price change timeliness is the time to which price changes are introduced by the enterprises. The effect of marketing information processes on performance is justified by Jaworski and Kohli [14] and further emphasized that the market orientation which reflects several information processes, has a positive influence on overall firm performance. Information process should lead to greater price change performance because they assist in the identification of market opportunities and threats that may facilitate the effective price marking strategy [24]. According to Moorman [24], how information processes affect timeliness depends on which information processes are being considered. In such conditions continuous environmental scanning data collections are very important [1]. In a general sense according to Ismail [11], a significant relationship is observedbetween MKIS and the right decision making. However, Xu [32] indicated that computer based information system have been used well in managing sales and sales promotion, direct selling as well as managing customer relations whereas other operational activities such as advertising campaign, pricing strategies and product design are not well supported by MKIS.

III. RESEARCH DESIGN AND METHODOLOGY

In modern marketing paradigm, MKIS is not limited to management functions only, but includes other functional units in an organization [6]. As a result, exhaustively measuring the constructs and dimensions of MKIS will be very difficult and complex [13, 28]. The dimensions of MKIS considered in this study; however, include some of the major ones identified by Jari [12], Kotler [18] and *Moorman [24]*. These include: ITI, DA, IP and the marketing decision making activities in the organizations. On the other hand constructs of PCD and PCO are adopted with little modification from *Ingenbleek et al. [9]*, *Ingenbleek [10]* and *Moorman [24]*. Based on these considerations the research model shown in Figure1 is developed. According to the research model, the data collected was analyzed using the available ITI for the purpose of decision-making such as PCD. The information obtained from MKIS will improve the PCD and the PCO of EIs. The research model shows that DA and ITI expected to have a direct impact on IP and the PCO. The PCD has also expected to have a direct effect on PCO. In related to the literature and the model developed, the following research hypotheses are drawn.

H_1: Data acquisitionand IT infrastructure have a positive impact on information processing.

H_2: Data acquisition and IT infrastructure have a positive impact on price Change Decisions.

H_3: Information processing has a positive impact on PCD and on the performance PCO.

H_4 PCD has a positive impact on the performance of PCO.

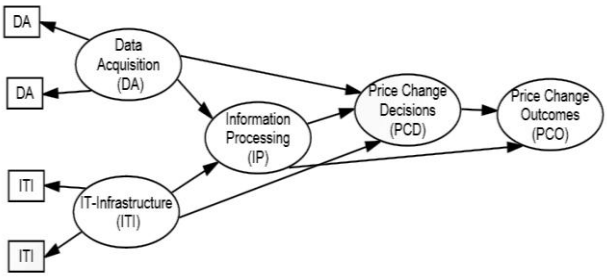

Figure1: The Research Model

In order to validate the research model, data for the construct was collected using pre-coded standard questionnaire which is designed in Five-point Likert scales as well as five-point semantic differential scales from 42 EIs. These scales were used to measure several constructs referring to the dependent and independent variables. The scale consists of a Summated Rating Metric Scales (SRMS), e.g. “Strongly Disagree”, “Disagree”, “Neutral”, “Agree” and “strongly Agree” or “Much Lower”, “Lower”, “Neutral”, “Higher”, and “Much Higher” whereas semantic differential scales that are characterized by opposites or bipolar end scales, like opportune/Inopportune, timely/untimely [7] are also used to some constructs.

In the data collection 150 enterprises with similar scale of economy [33] were randomly selected from a list obtained from Addis Ababa Chamber of Commerce (AACC). The population was categorized into three groups that were assumed to be homogeneous: production (64 industries); service (76 industries); and other sectors (10 industries). After conducting a pre-questionnaire test on five industries, the questionnaire was distributed to 65 enterprises that were proportionally selected from the above three groups. Of these 65 enterprises, 42 industries (19 enterprises from production, 20 from service, and 3 from other sectors) filled in and returned the questionnaire with a respondent rate of 64.6%. The sample size (42 industries) accounts for 28% of the total population of 150. SPSS vr.19 and AMOS vr.18 were used to purify the data and analyzed the confirmatory factor analysis (Varimax and direct Oblimin), reliability test, descriptive statistics, Pearson correlation, and path analysis.

IV. RESULTS

The constructs which are used in this study, are reported in Table1. The table includes the variables, the number of items considered (included) under each construct, mean, standard deviation, the reliability test-alpha, Tucker-Lewis’s goodness-of-fit-index (TLI),Bentler’s comparative-fit-index (CFI), and the goodness-of-fit index (GIF). Moreover, the root mean square residual (RMR) and

the chi-square ($\chi 2$) values are also reported in the same table. In order to have a valid construct in the model, each of the items comprising the construct was checked to see if it was unidimensional.

Each construct was then evaluated using a separate factor analysis (FA). Factors refer to "*Variables*" that couldbe measuring aspects of the same underlying dimension" [8]. Following Field's explanation as guidelines, the basis for factor acceptance was the point of inflexion on a scree-plot and eigenvalues greater than one. Because eigenvalues indicate the substantive importance of a factor (at least that item explains itself in the factors). According to Field [8] a factor is construed as reliable if four or more loadings are greater than 0.6 with a sample size of more than 150. But the sample size in this study is less than 150 (which is 42), and some variables contain items with factor loadings less than 0.6, but they are retained because they occur before the point of inflexion in the scree-plot and have their eigenvalues greater than one.

Table1: properties of purified constructs (Varimax)

	#ofItems*	Mean	Standard Deviation	Alpha	$\chi 2$	df	GFI	CFI	TLI	RMR
DA										
Data acquisition	6(6)	4.02	0.33	0.74	27.9	9	0.92	0.75	0.83	0.03
ITI										
IT infrastructure	4(4)	3.28	0.87	0.83	2.02	2	0.89	0.99	0.99	0.02
IP										
Information analysis	3(5)	3.52	0.81	0.54						
Conceptual use	5(5)	3.58	0.76	0.75	2.34	2	0.97	0.99	0.99	0.01
Instrumental use	11(14)	3.86	0.59	0.88						
Information transmission	4(6)	3.88	0.69	0.64						
PCD										
Value informed	3(4)	3.95	0.95	0.86						
Competition informed	3(3)	3.67	1.29	0.89	1.65	1	0.92	0.99	0.95	0.04
Cost informed	2(2)	4.22	0.85	0.78						
PCO										
Performance outcomes	4(4)	3.54	0.81	0.81						
Timeliness outcomes	2(2)	4.07	1.04	0.76	9.27	1	0.90	0.56	0.99	0.54

*Number of final items (initial items).

The model fit for each FA was evaluated using TLI, CFI, and the GIF. Moreover, RMR and $\chi 2$ values were also assessed as a reference for model fit. The FA suggested that all the items be retained for DA, ITI, conceptual use, competition informed price change, cost informed price change and all the constructs of the PCO. It is indicated that the data fit the model reasonably well to all the constructs (GIF ranges from 0.75 to 0.97 and TLI ranges from 0.83 to 0.99). However the CFI value for PCO is very low (CIF 0.53) which is a bad fit. During the time of running the model, the initial FA indicated bad fit with the model. But, based on the review and deletion of bad factor loading items, the FA suggested that 23 out of 30 items be retained to assess IP. The FA for IP indicated that the model fits well (GIF = 0.97, CIF = 0.99 and TLI = 0.99). In a similar way, the FA suggested 8 out of 9 and all the items to be retained for PCD and PCO respectively. For PCD, the model fits well (GIF = 0.92, CIF = 0.99 and TLI = 0.95).However, forPCO it fits well on the GIF = 0.90 and TLI = 0.99 doesn't fit well on the CIF = 0.56. The RMRs of all the constructs are also closer to zero, showing a perfect fit.

Cronbach's alpha measures how well a set of items (variables) in the measures of a single unidimensional latent construct was also tested. When data have a multidimensional structure, Cronbach's alpha is usually low. The higher the alpha value is the better the data reliable [8]. Most of the constructs are good with few exceptions, such as information analysis (alpha=0.54) and information transmission (initially with alpha=0.49) with low value and increased to Alpha 0.64 after deleting two items which have a bad loading. Though the commonly accepted level of Alpha is 0.60 [15], the finding showed that, apart from one construct (that for information analysis with alpha $\leq$0.60), all have a Cronbach's Alpha value $\geq$0.6. Moreover, all of the items under each construct have a factor loading $\geq$0.50 and correlated-item-total correlation $\geq$0.30 [7].

In all the cases multicollinearity levels were also examined and all the Variance Inflation Factors (VIF) are found to be less than 5 (which are far less than the harmful level; commonly taken as below 10). The assumption of normality is also tested by plotting the standardized residual against the standard-normal-quantiles (Q-Q plot) of all the regression analysis. Most of the plotted results are nearly similar and it can be assumed that in the multiple regression models the residuals (predicted minus

observed values) of these analyses are normally distributed.

The reported R^2 values estimate that the predictors of IP, PCD, and PCO explain 31.9%, 9.0%, and 7.0% of its variance, respectively. The findings indicated that except for the path coefficient leading from ITI to PCD (Υ_{21} = -0.14) and PCD to PCO (β_{21}= -0.22) all the path coefficients are positive, indicating that there is a positive relationship among them. The negative relationships observed on those paths are unexpected result. Moreover, the direct relationships between DA and IP (Υ_{11} = 0.34) and ITI and IP (Υ_{12}=0.45) are all found to be positive and statistically significant- they supported H_1. The path leading from ITI to PCD (Υ_{21} = -0.14) and AD to PCD (Υ_{22} = 0.21) are not statistically significant. These indicate that both DA and ITIare not good predictor of PCD - failed to support H_2. The influence of IP on PCD making (β_{11}= 0.13) and on PCO (β_{12} = 0.18) are not statistically significant and failed to support H_3. Moreover, the influence of PCD on PCO (β_{21} = -0.22) is not statistically significant and rather contradicts researchers' assumption and failed to support H_4.

Table2: The result of structural equation model testing

Path		Estimate	Standard error	R^2
Υ_{11}	IP<---DA	.34(0.01)*	0.10	0.32 (IP)
Υ_{12}	IP<---ITI	.45(0.00)**	0.08	
Υ_{21}	PCD<---ITI	-.14(0.40)	0.11	0.09(PCD)
Υ_{22}	PCD <---DA	.21(0.19)	0.12	
β_{11}	PCD<---IP	.13(0.47)	0.19	
β_{12}	PCO<---IP	.18(0.25)	0.20	0.07(PCO)
β_{21}	PCO<---PCD	-.22(0.15)	0.19	

*(p-value), All significant p<0.05, ** all significant p<0.01; $\chi 2$ = 1.10, df = 2, P = 0.58; GIF 0.81, CFI= 0.89, TLI=0.81, RMR=0.06.

V. DISCUSION

Ethiopian industries collect data and process it using the available ITI, but not used to PCD. This result contradicts the findings of Terrence et. al. [28] and Ismail [11] but inline with the findings of Xu [32]. Moreover, the IP is not a good predictor of PCD, which contradict the findings of *Jaworski and Kohli [14]* and Moorman [24]. Furthermore, the PCD made by marketers have no effect on the price change outcomes of the EIs. However, with a close investigation of the estimate or the beta coefficient, the path leading from PCD to PCO and from DA to PCD are longer than the path leading from IP to PCD and PCO. Based on the path analysis, IP is better than DA to predict PCD. PCD is also better than IP to predict PCO. The findings that show PCD has a negative and non-significant effect on PCO should; however, be taken in caution, it may resulted due to the small sample size.

Investment in ITI is growing and the need to collect and organize information among companies is becoming a common practice. This research's outcomes indicate potential failures in utilizing processed information in PCD in EIs.

VI. CONCLUSION

The objective of this research is to assess the role of MKIS on PCD making in the EIs. From the findings it can be concluded that the existence of MKIS in most EIs is manifested with the availability of good DA, ITI and IP. They processed the collected data with the available ITIs. However, none of them is used for the PCD making process in its marketing practices, which implies that the role of MKIS on PCD making is not as significant as it was expected. Moreover, the effect of PCD on PCO cannot be clearly observed in the research findings. This may indicate that EIs don't consider the collected and processed data for their PCD making. Rather, the PCD making process of EIs seems to be initiated by the immediate competitors' action without collecting data or without considering the processed information as an input in their decision making processes. As it can be evident from the path analysis the collected data (DA) is better consumed for the PCD making process in its raw form and its effect is indirectly reflected on the PCO. It can also be concluded that the processed information (IP) is not used well for PCD making. Due to this reason, its effect on PCO is also relatively weak as compared to DA. Therefore, EIs should devise a means to utilize efficiently the processed information on their decision making.

The paper will take researchers to a small step toward a new stream of research that focuses on the role of MKIS price change decisions. But price is only one element in the marketing mix. Therefore, future research integrates the role of MKIS on other marketing mix elements and other marketing practices such as promotion, product development, distribution and others.

ACKNOWLEDGMENT

The authors would like to Acknowledge AtoMelkuTezera and AtoMaledeBirhan for their editorial work and creative comment provided to our article.

REFERENCES

[1] Ahituv, N. &Machilin, J., "Environmental scanning andinformation systems in relation to success in introducing new products," Journal of Information & Management", 33(4), 1998, 201–211.

[2] A´lvarez, G.A. &Casielles, R.V., "Effects of price decisions on product categories and brands," Asia Pacific Journal of Marketing and Logistics, 2008, 20(1), 23-43.

[3] Alter, S., "Information Systems: The Foundation of E-Business, Pearson Educations, Inc," 4th ed., Upper Saddle River, NJ, 2002

[4] Brassington, F, &Pettitt, S., "Principles of Marketing," 2nd ed., Prentice Hall, 2000.

[5] EBDSN, Ethiopian Business Development Service Network, http://www.bds-ethiopia.net (accessed June 5, 2004)

[6] Berhan, E, &Kitaw, D., "The role of marketing information systems (MKIS) in service quality in Ethiopian industries," South African Journal of Industrial Engineering, 2012, 23(1), 66 -76.

[7] Evans, M., Moutinho, L, & Van Raaij, W. F., "Applied Consumer Behaviour," Addison-Wesley Publishing Ltd, 1996.

[8] Field, A., "Discovering Statistics using SPSS", 3rd ed., SAGE Publications, London 2009.

[9] Ingenbleek, P. Debruyne, M. Frambach, R.T &Verhallen, T.M.M., "Successful New Product pricing Practices: A contingency Approach", Journal of Marketing letters, 2003. , 14(14), 289-305.

[10] Ingenbleek, P., "Value-informed pricing in its organizational context: literature review, conceptual framework, and directions for future research", Journal of Product & Brand Management, 2007, 16(7), 441–458.

[11] Ismail, T.S., "The Role of Marketing Information System on Decision Making An Applied study on Royal Jordanian Air Lines (RJA)" International Journal of Business and Social Science, 2011, 2(3), 175-185.

[12] Jari, M.T., "Information systems in marketing identifying opportunities for new applications", European Journals of Marketing, 1995, 29(1), 8-26.

[13] Jari, M.T, &Timo, S., "MKIS support for the marketing management process: Perceived improvements for marketing management", Journals of Marketing Intelligence & Planning, 1995, 13(1), 8-27.

[14] Jaworski, B, &Kohli, A.K., "Market-orientation: Antecedents and Consequences", Journal of Marketing, 1993, 57(3), 53-70.

[15] Joseph, F.H,William, C.B. &Barry, J. B., "Multivariate Data Analysis "7th ed., Pearson Education/Prentice Hall, 2010.

[16] Kotler, P. & Armstrong, G., "Principles of marketing", 7th ed., Prentice-Hall International, 1996.

[17] Kotler, P., "Marketing management: Analysis, planning, and control" 4th ed., Englewood Cliffs, N.J., Prentice-Hall, 1980.

[18] Kotler, P., "Marketing management – Analysis, planning, implementation and control, 9th ed., Prentice-Hall International, London, 1994.

[19] Kotler, P., "Marketing Management", 11th ed., Upper saddle river, NJ, Prentice-Hall, 2003.

[20] Kumar, V., David, A, & George, S., "Essentials of Marketing Research", John Wiley and Sons, 1999.

[21] Lal, R., "Price Promotions: Limiting Competitive Encroachment", Journals of Marketing Science, 1990, 9(3), 247-262.

[22] Lancaster, G. &Massingham, L., "Essentials of Marketing", 3rd ed., McGraw-Hill Higher, 1998.

[23] Levy, D., Dutta, S., Bergen, M. & Venable, R., "Price Adjustment at Multiproduct Retailers", Journal of Managerial and Decision Economics, 1998, 19(2), 81-120

[24] Moorman, C., "Organizational Market Information Processes: Cultural Antecedents and New product Outcomes", Journal of Marketing Research, 1995, 32, 318-335.

[25] Mulhern, F. J. & Leone, R.P., "Measuring Market Response a Classification Approach", Journal of Business Research 1995, 33, 197-205.

[26] Murray, A, &O'Driscoll, A., "Strategy and Process in Marketing", Prentice Hall Europe, 1996.

[27] Solomon, M, and Stuart, E., "Marketing: People, Real Choices", 3rd ed., Upper saddle river NJ: prentice-Hall, 2003.

[28] Terrence, V., Denise, D. & Geoffrey, L., "Marketing information systems for consumer products companies: A management overview", Journal of Consumer Marketing, 1995, 12(5), 16-36.

[29] Thomas T. T., "The use of marketing research and intelligence in strategic planning: key issues and future trends", Journals of Marketing Intelligence & Planning, 200119(4), 245 – 253

[30] Webster, E., Frederick, J.R., "The Role of Marketing and the Firm: Handbook of Marketing, edited by: Barton A. Weitz& Robin Wesley, SAGE Publication, 2002.

[31] Wierenga, B., Peter, A. &Ophuis, O., "Marketing decision support systems: Adoption, use and satisfaction. Journal of Research in Marketing, 1977, 14, 275–290.

[32] Xu, X., "The strategies orientation of marketing information systems – an empirical study", Journals of Marketing intelligence and planning, 1999, 17(6), 262-271.

[33] Zewede, S., "Promoting micro and small enterprises (MSEs) within the development context of Ethiopia", Paper presented at the Workshop on Regional Development Policy and Data System, in the Ministry of Economic Development and Cooperation, July 26-30, 1999, Nazaret, Ethiopia.

Eshetie Berhan is currently working towards his PhD degree in Mechanical Engineering with specializaiton in Industrial Engineering in Addis Ababa University, Addis Ababa Institute of Technology (AAiT), Addis Ababa, Ethiopia.

Dr. Daniel Kitawan associate professor in Addis Ababa University. He is the chair of industrial Engineering stream in the department of mechanical Engineering. He received his PhD degree in Industrial Engineering from Politechnico di Torino, Italy.

BirhanuBeshahan assistant professor in Addis Ababa University. He received his PhD degree from Addis Ababa University in Mechanical Engineering with Industrial Engineering specialization. His area of research is on Quality Management and Engineering.