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Critical Failure Factors and Significance of Business Intelligence System on Decision Making in Pakistan

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Abstract

Business Intelligence is one of most perfect ways to explore the essential limits of affiliation, yet the use times of these capacities are frequently overwhelmed with issues. That is the reason various assignments of such capacities miss the mark. The key inspiration driving this examination is to perceive the essential frustration components which are also known as critical failure factors (CFF) in the pre-execution time of Business Intelligent (BI) structure and to test relationship between these fundamental parts. Small and Medium Enterprises (SMEs) cannot be disregarded in third world countries like Pakistan. Population of Pakistan is picked as target masses as an after effect of its principal part in the change of economy, for instance, making work opportunities, growing gross domestic product, extending the exports volume etc. The limits of cost are fundamental five, with most surprising estimation of mean which are additional cost associated with the managing BI, nonattendance of budgetary resources, candid cost, cost of procuring BI programming and setup cost exclusively. This symbolizes the cost variable which is a first limit in predominance things with a particular deciding objective to dismember BI in pre-execution stage. Pepsi Co. is using BI technology to bend the raw data into useful information, resultant information into knowledge and plans that are optimizing business strategic activities such as decision making and improve the proactive management, curtail expenditure and capitalize the profit.

Keywords

Small and Medium Enterprises, Pre-Implementation Phase, Decision making

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1. Introduction

The description of profitable and successful business, in this industrialize revolution time is about administering, systemizing, measuring, observing and investigating the value-based information with innovation, capably and viably. Certainly, uniqueness of contemporary associations is the information upset that has been consistently occurring in the course of the most recent two decades.

Numerous specialists and researchers even see authoritative and administration basic leadership to be amidst a steady change from an intuition driven "craftsmanship" to a continuously information driven methodology. Everyday enormous measure of basic information is delivered amid each operational exchange in an organization (Al-Ma'aitah, 2013). BI changes over data into information with human judgment and instincts, thus stories of accomplishment now get to be yarn of overseeing insight (Wieder, Ossimitz, and Chamoni, 2010).

Jayanthi (2011) explained that BI is set of exercises, for example, gathering, combining, sorting out and exhibiting data in such approach which let the corporate world to create the better business choices toward their craved goals. BI is device, innovation or procedure inside organizations determine intriguing environment. BI benefits as much as possible from Business Procedures and belonging in ingenious and capable way, enhance the proactive basic leadership, abridge use and underwrite the benefit. Britter (2009) put BI in the main ten vital innovations. These outcomes are reliable with those of the most recent five years, which demonstrate that associations are as yet attempting to gain ground with BI for gainfulness and efficiency.

The usage of BI frameworks is epic test. In business, it is partnered not simply with points of interest and advantages, but rather then again, in some association it additionally creates certain blockades, tribulations and dangers. Not simply innovation has key impact, but rather on top of all components, for example, group, forms, overseeing style and conventions of the association, are likewise basic. These elements much of the time symbolize an enormous quandary and can disturb or turn away endeavors and endeavors of sending of a strong BI answer for working undertaking of associations. These elements are recognized as basic elements. The present motivation behind study is to perceive CFF in pre execution period of BI framework.

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2. Literature Review

Yeoh (2010) mentioned that basic component for BI disappointments are administration issues, changing necessities and targets, Legitimization and spending plan, association and staffing, client issues, community oriented work issues, venture arranging and booking, information distribution center norms, devices and sellers, security, information quality, reconciliation, information stockroom engineering, and execution. The primary zones of danger are degree creep, uncontrolled accounts, Poor Correspondence, partner non-contribution, abilities lack, inaccessibility of devices and innovation, uncontrolled nature of deliverables, poor, wrong or no pioneer, specialized troubles, lawful challenges.
Lundqvist (2010) showed that CFF are fundamentally set of assignments when emerge as a block before or after the execution of BI. Its usage is not a basic and less demanding task; rather it involves the perplexing base, long haul fitting assets and improvement of decades.

Srichai and Thammakoranonta (2011) explained that two supervisory angles administration and innovation are observed to be key obstructions in the BI framework failure. They grasp top administration support, change administration, clear vision and mission, authoritative society, information data exactness, reasonable information quality, reasonableness of equipment and framework dependability. CFF are of specialized or administrative nature as well as have strong social influence. Programming and arrangement of any association includes three basics components which makes conceivable the fruitful running of venture. These are individuals, innovation and procedures toward the usage of various sorts of techniques in an organization: In corporate strategies administration attempt to make arrangement between BI framework and authoritative procedure to build the viability of business basic leadership, development and improvement though in innovation point of view systems up gradation of innovation, programming's and progression is incorporated parallel.

Ziemba and Olszak (2012) recognized regular slip-ups in actualizing BI frameworks are; utilizing unplanned practices to choose and subsidize BI venture, giving lacking administration to BI program administration, building up accepted system administration in view of the underlying BI ventures, neglecting to deliberately position BI in business association, not giving satisfactory assets and financing required for fruitful BI activity.

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Sangar and Iahad (2013) point out that mechanical obstructions to BI selections are; absence of abilities to execute BI information stockroom, absence of innovation, information security concerns, regular information inactivity issues, BI venture intricacy, BI devices exceedingly particular for far reaching use, complexities of information administration, divided information sources in the undertaking. From authoritative point of view hindrance to BI selection are running costs, absence of official load up premium, no genuine or unmistakable advantages, poor return of speculation, absence of learning about BI item, execution time slacks. From ecological point of view are deficient government bolsters for BI activities, absence of a complete BI Suite offering by any seller, average BI frameworks not streamlined for OLTP.

Armstrong, Gallo and Williams (2013) computer were used for clerical activities in organizations. Financial record is always use as a device to compute and evaluate the firm's performance. Intelligence is a mixture of analysis, assessment, and interpretation of information according to the particular difficulties that this may entails to donate organizations with a cutthroat strategy to compete in the market and be profitable at the same time. BI responsibilities includes forecast future with the past and present performance and what if' analysis of impact of changes and alternative scenarios.

3. Research Methodology

Organizations don't exhibit the failure of BI framework execution. In any case, BI failure rate is dreadfully high because of its mind boggling structure. To make certain destinations of examination being achieved; the targets were contrived as follows:
- Recognize the BI response level in Pakistan
- Distinguish the critical BI CFF in SMEs Pakistan
- Investigate the relationship between failure of pre-treatment period of BI and its CFF in SMEs Pakistan
- Find out the BI importance for an organizational quality decision making
- Find out the BI role to increase efficiency and effectiveness of the organization

Pre-Implementation of BI system failure includes; technological barriers, organizational barriers, environmental barriers, cost barriers. The research

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hypothesis investigated is: There is noteworthy relationship between failure of BI framework in pre execution stage and CFF.

The research utilizes quantitative procedures to investigate the critical failure factors. SPSS is utilized for the experimental investigation through regression and Factor examination. Random sampling techniques utilized to gather the data through survey from 450 respondents. The survey is intended to gather data relating to demographic of respondents and organization, BI appropriation level, hindrances to BI reception. Another questionnaire is used to collect the data from one hundred employees of Pepsi Co. This questionnaire was designed to collect information regarding demographic of respondents and company, BI usage its relationship with decision making.

4. Data Analysis

There were total of 24 BI Barriers in view of categories including: 6 technological barriers, 6 financial barriers, 9 organizational barriers, and 3 environmental barriers.

4.1 Reliability Analysis: A reliability analysis is conducted to identify the Cronbach's alpha value. Estimation of Cronbach's alpha is .661 which is not satisfactory. By removing 8 factors related to organizational and environment factor including OF1, OF2, OF3, OF4, OF5, OF7, EF1 and EF3 from reliability analysis, the value of Cronbach's alpha for barriers increased to 0.707.

4.2 Descriptive Analysis: An elucidating examination was performed to depict the demographic of members. The showing of the essential demographic qualities incorporates gender, age, and position and organization industry. The collected sample consists of 64.44% (288 participants) male and 35.56% (162 participants) female where mass participants were in the slot of 21-30 which consisted 42.67% (192 participants). There were 31.78% (143 participants) resides into category of age from 31-40 and 25.56% (115 participants) in age group of 41-50. The workers who works under the assignment of business management or middle management in an association comprises of 53.87% (242 members) and hence official staff incorporate 22.1% (124 members). Then the position of IT Professionals were containing 17.78% (80 Participants), 0.89% (40 members) separately.

Distinctive natures of organization's rate are: among each of the 12.89% information of respondents has been accumulated from publicizing/marketing

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industry, 4.225 from consultancy field, where as 7.11% information was amassed from nourishment and refreshments industry.4.00% of the respondents information was from Manufacturing industry, 6.67% from training and foundations, 10.89% from the Textile/Apparels, 10.00% from Horticulture, 8 % from the telecom establishments area, 9.11 % from were overhauled in data innovation and 17.11% are recorded in hospitality accommodation and travel part.

In Pepsi Co. 31% respondents were top management, 23 % IT professionals, executives and analysts each. 50% respondents uses "My SAP tm" (SEM) and 50% uses "My SAP Business Suite" as a BI tool. 45% respondents said that our BI team responds to most projects but employees also use BI tools to address their needs, 20% said that BI team responds to all project requests and delivers the results to business contacts, 22% our BI team primarily mentors clients in the use of BI/analytic tools, 13 % BI capabilities are fully automated within our operational systems.

Among the 100 respondents from Pepsi Co. 26% respondents were in opinion that "very strong use", 45% considered that "strong use" of BI as operation cost centre tool is used in organization. While 17% think that the use of BI as operation cost is normal while 12% consider that use is not much strong.

25% respondents were in opinion that "very strong use", 53% considered that "strong use" of BI as tactic resource tool is used in organization. While 17% think that the use of BI as tactic resource tool is normal while 5% consider that use is not much strong.

26% respondents were in opinion that "very strong use", 45% considered that "strong use" of BI as critical resource tool is used in organization. While 16% think that the use of BI as critical resource tool is normal while 13% consider that use is not much strong.

27% respondents were in opinion that "very strong use", 45% considered that "strong use" of BI as strategic resource tool is used in organization. While 16% think that the use of BI as strategic resource tool is normal while 12% consider that use is not much strong.

26% respondents were in opinion that "very strong use", 46% considered that "strong use" of BI as competitive differentiator tool is used in organization. While 16% think that the use of BI as competitive differentiator tool is normal while 12% consider that use is not much strong.

Regarding accuracy of data warehouse, 8% respondents considered that "Extremely accurate", 23% considered that "very accurate" data used in organization. 26% think that data is "accurate", while 43% considered that inaccurate data is used warehouse.

Regarding BI system give timely information, 58% respondents were "strongly agree", 18% were "agree" that BI system give timely information. 11% remained "neutral", while 13% were "disagree" that BI system give timely information (Fig. 1).

Regarding BI system give accurate information, 21% respondents were "strongly agree", 65% were "agree" that BI system give accurate information. 12% remained "neutral", while 2% were "disagree" that BI system give accurate information (Fig. 2)..

Regarding BI system reduced operation cost, 22% respondents were "strongly agree", 43% were "agree" that BI system reduced operation cost, 28% remained "neutral", while 7% were "disagree" that BI system reduced operation cost(Fig.3).

Regarding BI system improve efficiency of decision making, 29% respondents were "strongly agree", 58% were "agree" that BI system improve efficiency of decision making, 12% remained "neutral", while 1% were "disagree" that BI system improve efficiency of decision making (Fig.4).

4.3 Factor Analysis: Estimation of KMO is .754 it speak to the inspecting ampleness is at satisfactory level. Bartlett's test of sphericity is satisfactory with the estimation of 0.000. The Table 2 demonstrates every one of the variables required in exploration study extractable from the investigation alongside their eigen values, in this examination, there are four elements with eigen values higher than 1. The "% of variance" quantities illuminate that the amount of the aggregate variability can be figured by each of these conceptual components. Component 1 report for 21.275% of the variability in every one of the 16 variables, element 2 represents 10.467% of the variability in all etc. All the rest of the elements are not critical. Total % section represents 47.117% variability among every one of the 16 variables. The Table 3 exhibits the loadings of the sixteen variables into four components. The opening on the table symbolizes loadings that have esteem under 0.5. We concealed all loadings not as much as estimation of 0.5.

4.4 Regression Analysis: Regression analysis led to distinguish the relationship between sixteen barriers get out through component investigation. Sixteen barriers are ordered into four main considerations which are further utilized as independent variables to anticipate of BI framework as the exclusively dependent

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variable. Variable for whom we want to check the relationship are: TF1, TF2, TF3, TF4, TF5, TF6, CF1, CF2, CF3, CF4, CF5, CF6, OF3, OF8, OF9 and EF2.

4.5 Regression analysis on critical technological barriers against failure of BI system: In view of regression result (Table 4), the P-value in ANOVA is 0.001 which is less than 0.05. Subsequently, there is strong relationship between basic technological barriers and BI System failure. R square value shows that there is 2% of aggregate of Y (failure of BI pre implementation stage) explained by the regression model comprising six technological barrier.

4.6 Regression analysis on basic costing barriers against failure o of BI framework: Based on regression result represented in (Table 5), the P-value in ANOVA is 0.000 which is less than 0.05. Therefore, there is significant relationship between critical cost barriers and BI system failure. R square value represents that there is 4% total of Y (failure of BI pre implementation phase) explained by the regression model consisting six costing barriers.

4.7 Regression analysis on basic organizational barriers against failure of BI system: Regression result in (Table 6) the P-value in ANOVA is 0.000 which is under 0.05. In this way, there is strong relationship between basic organizational obstructions and BI System failure. R square shows that there is 3% of aggregate of Y (failure of BI pre usage stage) clarified by the regression model comprising three organizational barriers.

4.8 Regression analysis on critical environmental barriers against failure of BI system: In light of regression result in (Table 7), the P-value in ANOVA is 0.266 which is higher than 0.05. Consequently, there is no noteworthy relationship between critical environmental barriers and BI System failure. R square shows that there seems to be .3% of aggregate of Y (failure of BI pre implementation stage) clarified by the regression model comprising environmental barriers.

4.9 Regression analysis on all barriers against failure of BI system: In the model (Table 8) support to quantify about the goodness of the model. The value of coefficient of determination is 0.136, so 13% of the change in failures of BI framework at pre-usage stage can be explained by technological, cost, organizational and environmental factors.

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In coefficient table, the coefficient of cost component is .552 is highly significant (p-value = 0.000) shows the failure of BI framework increased by 0.552 when the cost barrier variable increases by one unit, holding all other variables (environmental, technological and organizational) constant. Coefficient of technological component showing that - .319 is highly significant (p-value = 0.000) of the failure of BI framework to reduction of 0.319 when that technological barriers increase by one unit, holding all other variables (environmental, cost and organizational) fixed. The coefficient of environmental element exhibiting that .051 is insignificant (p-value = 0.328) of the failure of BI framework is required to increase 0.051 units when the environmental barrier is increased by one unit. The coefficient of organizational component showing that - .210 is highly significant (p-value = 0.000) of the failure of BI framework is required to lessening 0.210 when that organizational value increased by on unite, holding all other variables (environmental, technological and cost) constant. Thus, three barriers technological, cost and organizational are connected with failure of BI framework, while environmental barriers are not significantly related with the failure of BI framework.

5. Conclusion

In Pakistan, just 2 percent SMEs utilizing BI framework for their basic leadership others are utilizing diverse sort of apparatuses for the viable administration. Some critical barrier distinguishes basically affecting the corporate choice to implement BI modules. The barriers of cost are esteeming among main five with most noteworthy estimation of mean which are additional cost connected with the overseeing BI, lack of money related assets, upfront cost, cost of acquiring BI programming and setup cost separately. This symbolizes the costing element is a principal barrier in prevalence things keeping in mind the end goal to investigate BI in pre execution stage. BI system reduced operation cost in the organizations as well as BI system improves efficiency of decision making and thus the quality of the decision making in the organizations.

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Table 1: Detail of critical factors

Technological Factors	Cost Factor	Organizational Factor	Environmental Factor
TF1:Lack of Skill to handle BI program TF2:Lack of technology TF3:Data Security Concerns TF4:Poor Data Quality TF5:BI Software complexity TF6:Complexity of Data Management	CF1:UpfrontCost CF2: Setup Cost CF3: Cost of Obtaining BI Software CF4:AdditionalCostassociate dwithmanagingBI CF5: Lack of Financial resource CF6:Cost required to support management and training	OF1:Lack of executive board interest OF2: Lack of Knowledge about BI product OF3:Lack of user oriented change management OF4:Lack of Business centric championship OF5:Lack of Business vision and Planning OF6:Organizational resistance OF7: Inadequate governance for BI program OF8: Poor Business and BI alignment OF9: Incomplete Business requirements	EF1: Insufficient Govt. support for BI initiatives EF2:Lack of user adoption EF3:Lack of interest from user solution

Table 2: Total variance explained

Total Variance Explained						
Component	**Initial Eigenvalues**			**Extraction Sums of Squared Loadings**		
	Total	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	3.404	21.275	21.275	3.404	21.275	21.275
2	1.675	10.467	31.742	1.675	10.467	31.742
3	1.305	8.158	39.901	1.305	8.158	39.901
4	1.155	7.216	47.117	1.155	7.216	47.117
5	.998	6.240	53.357			
6	.962	6.010	59.367			
7	.930	5.810	65.177			
8	.870	5.440	70.617			
9	.780	4.875	75.492			
10	.723	4.520	80.012			
11	.634	3.965	83.978			
12	.589	3.678	87.656			
13	.588	3.674	91.330			
14	.544	3.398	94.728			
15	.473	2.955	97.684			
16	.371	2.316	100.000			
Extraction Method: Principal Component Analysis.						

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Table 3: Component Matrix

<table>
<tr><th colspan="5">Component Matrix^a</th></tr>
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Barriers BI	Component			
	1	2	3	4
TF2:Lack of technology	.603	-.157	.075	.115
OF9:Poor Business and BI alignment	.542	-.311	-.052	.120
TF3:Data Security Concerns	.534	.122	.006	-.328
TF4:Complexity of Data Management	.529	.043	-.357	-.161
OF10:Lack of user oriented change management	.522	-.239	.148	.197
OF3:Incomplete Business requirements	.517	-.245	.344	.284
CF2: Setup Cost	.517	-.239	.158	.158
TF1:Lack of Skill to handle BI program	.306	-.289	.179	.144
CF4:Additional Cost associated with managing BI	.443	.684	.172	.173
CF3: Cost of Obtaining BI Software	.444	.652	.102	.204
CF5:LackofFinancialresource	.198	.543	.231	-.165
CF6:Cost required to support management and training	.453	.128	-.592	-.087
TF5: BI Software complexity	.519	-.150	-.557	.005
CF1:Upfront Cost	.379	-.141	.405	-.333
EF2:Lack of user adoption	.056	.181	-.228	.573
TF6: Poor Data Quality	.477	.003	.058	-.532
Extraction Method: Principal Component Analysis. 4 components extracted.				

Table 4: Regression analysis on critical technological barriers against failure of BI system

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.153^a	.023	.021	1.26698

a. Predictors: (Constant), Technological factor

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	4.016	.223		18.018	.000
Technological factor	-.237	.072	-.153	-3.283	.001

a. Dependent Variable: Failure of BI preimplementation Phase

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17.297	1	17.297	10.775	.001[b]
	Residual	719.148	448	1.605		
	Total	736.444	449			

a. Dependent Variable: Failure of BI pre implementation Phase

b. Predictors: (Constant), Technological factor

Table 5: Regression analysis on critical costing factors against failure of BI system

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.210[a]	.044	.042	1.25353

a. Predictors: (Constant), Cost Factor

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	32.483	1	32.483	20.672	.000[b]
	Residual	703.962	448	1.571		
	Total	736.444	449			

a. Dependent Variable: Failure of BI preimplementation Phase

b. Predictors: (Constant), Cost Factor

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.092	.275		7.621	.000
	Cost Factor	.340	.075	.210	4.547	.000

a. Dependent Variable: Failure of BI pre implementation Phase

Table 6: Regression analysis on critical organizational factors against failure of BI system

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.176[a]	.031	.029	1.26218

a. Predictors: (Constant), organizational factor

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22.739	1	22.739	14.274	.000^b
	Residual	713.705	448	1.593		
	Total	736.444	449			

a. Dependent Variable: Failure of BI pre implementation Phase

b. Predictors: (Constant), organizational factor

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.880	.162		23.965	.000
	Organizational factor	-.211	.056	-.176	-3.778	.000

Table 7: Regression analysis on critical environmental factors against failure of BI system

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.053^a	.003	.001	1.28035

a. Predictors: (Constant), Environmentalfactor

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.037	1	2.037	1.242	.266^b
	Residual	734.408	448	1.639		
	Total	736.444	449			

a. Dependent Variable: Failure of BI preimplementation Phase

b. Predictors: (Constant), Environmental factor

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.220	.102		31.665	.000
	Environmentalfactor	.062	.056	.053	1.115	.266

a. Dependent Variable: Failure of BI preimplementation Phase

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Table 8: Regression analysis on all critical failure factors against failure of BI system

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.369[a]	.136	.129	1.19557

a. Predictors: (Constant), organizational factor, Environmental factor, Cost factor, Technological factor

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	100.371	4	25.093	17.555	.000[b]
1	Residual	636.073	445	1.429		
	Total	736.444	449			

a. Dependent Variable: Failure of BI pre implementation Phase
b. Predictors: (Constant), organizational factor, Environmental factor, Cost factor, Technological factor

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	2.769	.293		9.452	.000
	Cost factor	.552	.078	.341	7.036	.000
1	Technological factor	-.319	.082	-.206	-3.873	.000
	Environmental factor	.051	.052	.043	.980	.328
	Organizational factor	-.210	.061	-.175	-3.459	.001

a. Dependent Variable: Failure of BI pre implementation Phase
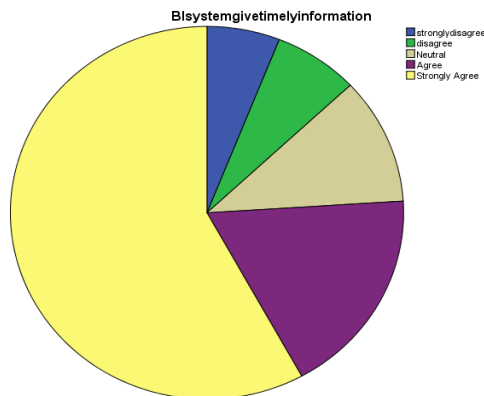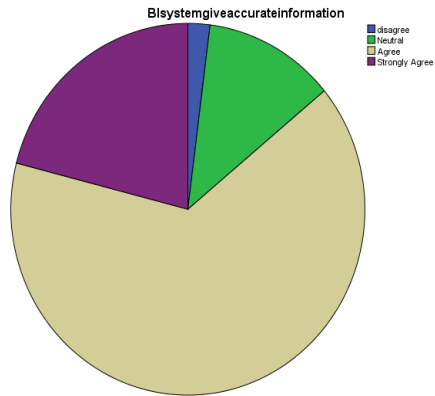

Figure 1: BIS timely information
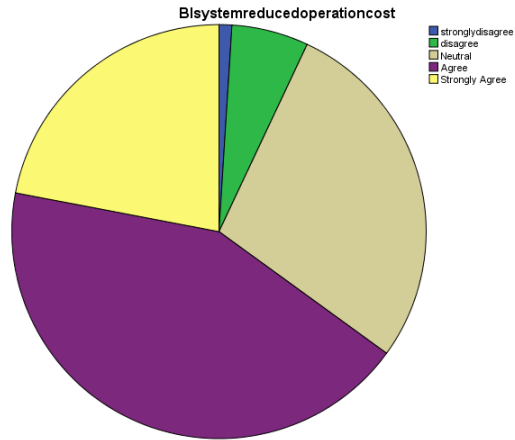
Figure 2: BIS accurate information
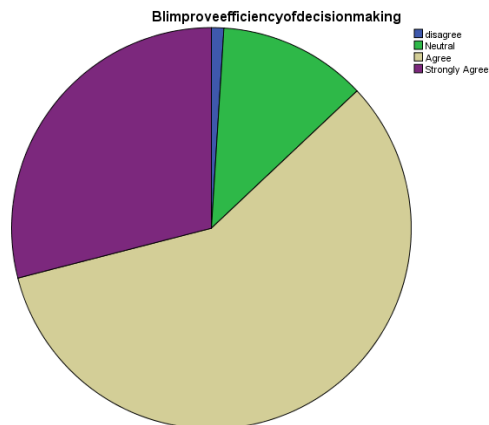

Figure 3: BIS reduced operation cost

Figure 4: BIS improve efficiency of decision making

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