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# 1.

## 1.1

1.1.1 Z세대 (Generation Z)는 디지털 네이티브 세대로서, 하이퍼-네트워크드 세계(hyper-networked world)에서 성장했다. 이들은 소셜 미디어와 디지털 기술을 통해 연결되어 있으며, 개인화된 경험과 즉각적인 반응을 기대한다. 또한, 그들은 다양성과 포용성을 중시하며, 사회적 책임을 가진 기업에 더 끌린다. 이러한 특성은 마케팅 전략을 재구성하는 데 중요한 시사점을 제공한다.

1.1.2 Z세대는 교육 수준이 높고, 글로벌 시야를 가진 세대로, 다양한 문화와 언어에 능숙하다. 이들은 정보에 민감하며, 신뢰할 수 있는 출처를 찾고, 타인의 리뷰와 평가를 중요하게 생각한다. 또한, 그들은 유연한 근무 환경과 워라밸을 중시하며, 기업의 사회적 가치에 관심을 갖는다. 이러한 특성은 마케팅 전략을 재구성하는 데 중요한 시사점을 제공한다.

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<sup>1</sup> [Source], [Author], (2015)

<sup>2</sup> Han, J., *Marketers Brace for Generation Z Customers*, Korea Times, 2007

<sup>3</sup> [Source], [Author], (2015)

*Mission and Ministry*<sup>3</sup> (2010)

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31 ,  
.<sup>4</sup> *Mission and*  
*Ministry*<sup>5</sup> ,  
Z  
( . *multi-tasking*).  
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” “<sup>6</sup>  
Z:<sup>7</sup>  
Z  
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chat ;  
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<sup>3</sup> Levickait , 2010

<sup>4</sup> Levickait , R., *Generations X, Y, Z: How Social Networks Form the Concept of the World Without Borders (The Case of Lithuania)*, *LIMES*, 3(2), 2010

<sup>5</sup> spored Levickait , 2010

<sup>6</sup> *Mission and Ministry*, 2010, spored Levickait , 2010, p. 173

<sup>7</sup> Petri , D., *Homo zappiens: Generacija koja se rodila s daljinskim, mobitelom i webom*, 2007, <http://www.jutarnji.hr/homo-zappiens--generacija-koja-se-rodila-s-daljinskim--mobitelom-i-webom/215658/>, [pristapeno na 12 septemvri 2016]

Prensky<sup>8</sup> (2001) Z „ ( .  
*Digital Native*),

Matthews<sup>9</sup> (2008) Z

<sup>10</sup>

Z Woodruffe<sup>11</sup> (2009).

Z

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<sup>8</sup> Prensky, M., *Digital Natives, Digital Immigrants*, MCB University Press, 9(5), 2001, . 1-6

<sup>9</sup> Matthews, 2008, spored Knežević, I., *Upravljanje Generacijom Z*, Diplomski rad, Zagreb, Ekonomski fakultet, 2010

<sup>10</sup> Matthews, 2008, spored Knežević, I., *Upravljanje Generacijom Z*, Diplomski rad, Zagreb, Ekonomski fakultet, 2010

<sup>11</sup> Woodruffe, C., Still in the making, *Training Journal*, 13(7), 2009, .35

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12 ,, ,, (2009)  
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1.2

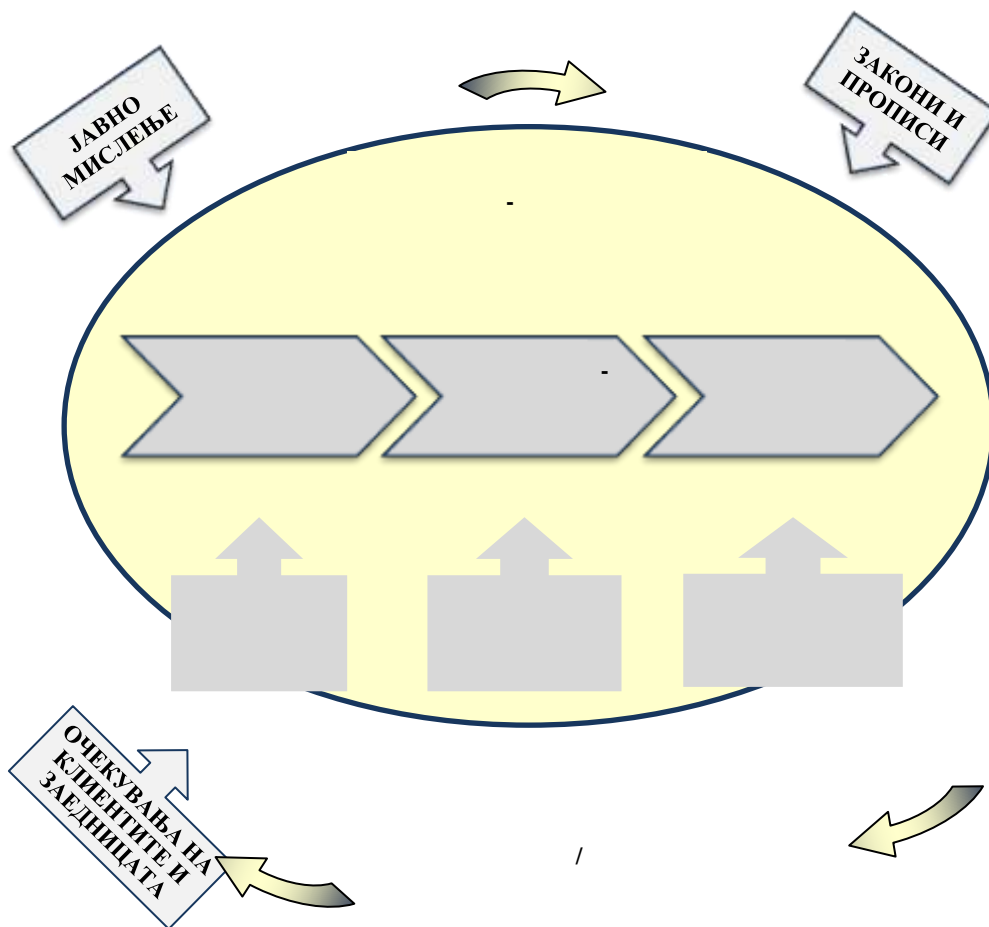
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2. ( );
3. ( , - );
4. ( ) .

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<sup>14</sup> , , , (2015)







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(Howard G. Haas)

(Bob Tamarkin),<sup>18</sup> „

<sup>17</sup> Whitaker, P. (1995) *Managing change in schools*, Open University Press, p.112

<sup>18</sup> Masi ,B., Babi ,L., Bojanovi ,Dz.J., Dobrivoi ,G., Veselinovi ,S. (2010):*Menadžment : principi, koncepti i procesi*, Beograd: UNIVERZITET SINGIDINUM, str.176

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<sup>19</sup> Kotter, J. (1996): *Leading Change*, Harvard Business Press, p.89

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<sup>20</sup> Lon arevi , R. (2007) *MENADŽMENT: PRINCIPI, KONCEPTI I PROCESI*, Beograd: Univerzitet Singidunum, str.200





### 1.3

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<sup>22</sup> Heleta, M. (1995) *Kvalitetom u svetu: sistem kvaliteta osnova za TQM*, Beograd: Magenta ZI, str.3

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23

(technical).<sup>24</sup>

(human)

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<sup>23</sup> ., (2009):

<sup>24</sup> .68

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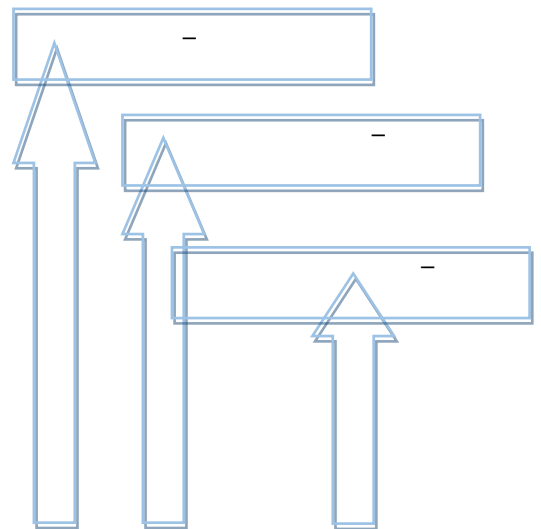
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(educational)

. Toa,

(symbolic)

(cultural)



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## 2.

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(lifelong learning).

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25 „... (2014): „... “  
 26 ” - “... 20 „... (2014): “  
 27 ” - “... 20 „... (2004): „... 64-66

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(pre-service training),

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(Classroom Management)

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37     , ..     , ..

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„ .. (2014): „ „ “







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$a = 120cm$   $a_1 = 115cm$

$b = 100cm$   $b_1 = 70cm$

$H = c = 105cm,$

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$$V = \frac{H}{3} (B + B_1 + \sqrt{B \cdot B_1}) ,$$

:

$$B = a \cdot b = 120 \cdot 100 \qquad B_1 = a_1 \cdot b_1 = 115 \cdot 70$$

$$B = 12000 \text{ cm}^2 \qquad B_1 = 8050 \text{ cm}^2$$

$$V = \frac{105}{3} (12000 + 8050 + \sqrt{12000 \cdot 8050}) ,$$

$$V = 1045747,5 \text{ cm}^3 .$$

3

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$$V_{VK.} = 3 \cdot V = 3 \cdot 1045747,5$$

$$V_{VK.} = 3137242,5 \text{ cm}^3 = 3,14 \text{ m}^3$$

:

$$d = 30 \text{ cm} \qquad R = \frac{d}{2} = 15 \text{ cm}$$

$$d_1 = 16 \text{ cm} \qquad R_1 = \frac{d_1}{2} = 8 \text{ cm}$$

$$H = 27 \text{ cm}$$

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:

$$V = \frac{H}{3} (R^2 + R_1^2 + R \cdot R_1) .$$

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$$V = \frac{27}{3} (225 + 64 + 120) ,$$

$$V = 3681 \text{ cm}^3 . \qquad 52 ,$$

:

$$V_{VK.} = 52 \cdot 3681 = 3.14 \cdot 601033,68 \text{ cm}^3 .$$

x-

$$1 \qquad V_{VK.KONUSI} = 601033,68 \text{ cm}^3 = 0,6 \text{ m}^3$$

$$x * 601033,68 = 3137242,5 \text{ cm}^3$$

$$x = \frac{3137242,5 \text{ cm}^3}{601033,68 \text{ cm}^3}$$

$$= 5,2$$

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$3,14 \text{ m}^3$

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$3,14 \cdot 52,14 = 163,7285714 \text{ m}^3$ .

$36 \text{ m}^2$ .

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$163,73 \text{ m}^3$ .

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163,73 : 36 = 4,548  $\approx$  4,5m.

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<sup>41</sup> ;: - , .156  
<sup>42</sup> , ,, , .(2010): , , .265



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<sup>44</sup> 17, 1, 2 3  
. 10/15)

<sup>45</sup> 20 1  
10/15 )

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## 4.2

Childhood Development“,

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Doug Curry, „Education and Early

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(eng. Formal Education)

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<sup>46</sup>

„ - “, , .112

, .. (2014):

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(eng. *Non-formal Education*)

*Education*)

(eng. *Informal*

- *(eng. Pre-service Ttraining)*
- *(eng. In-service Ttraining)*

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(Power Point, .)



„workshop“

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OECD<sup>49</sup> TALIS<sup>50</sup>,

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(coaching).

( peer observation),

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<sup>49</sup> OECD- (Organization for Economic Cooperation and Development),

25

<sup>50</sup> TALIS (Teaching and Learning International Survey)

23

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<sup>51</sup> OECD TALIS (2009), Creating effective teaching and learning environments, First results from TALIS quoted in Agencija za odgoj i obrazovanje, Stru no usavršavanje i profesionalni razvoj, Zbornik radova, 32

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, ,, , ., (2015)

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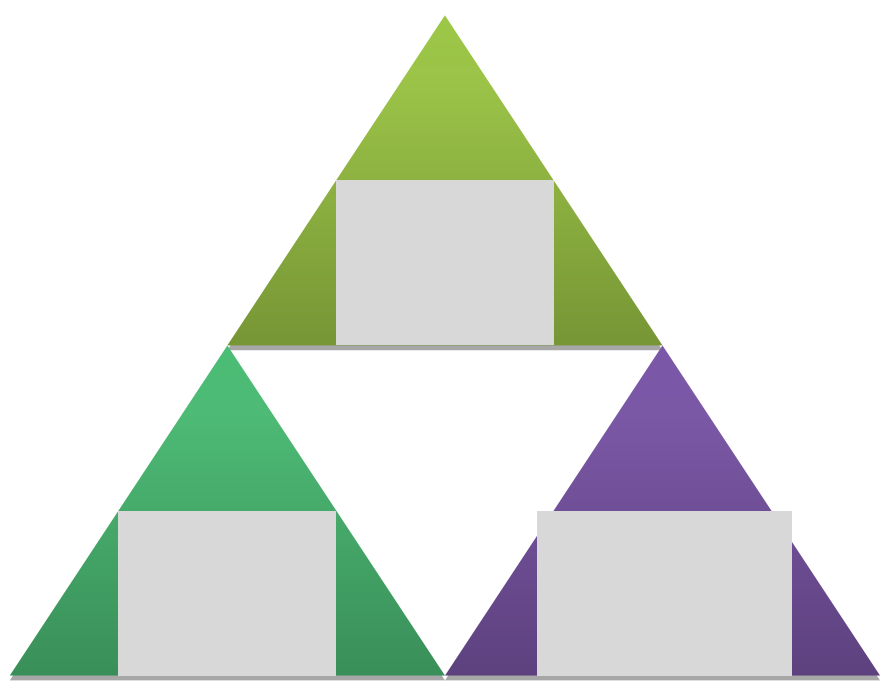
<sup>54</sup> „...“ (2015)

<sup>55</sup> Kovačević i Dominić, „Akcijsko istraživanje i profesionalni razvoj učitelja i nastavnika“, 14

### 4.3

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56 ， ， ， (2012): ， ， ， ， 52



57

Values or Death,



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57  
, „ , (2010):  
, , .275-276

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, Thimmoty Gallaway

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„ 58

Gallaway, : „

“ 59

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<http://www.skyisthelimit.org/osnovi%20na%20koucingot.pdf>

59

<http://www.skyisthelimit.org/osnovi%20na%20koucingot.pdf>

60

Graham Alexander,

è , GROW

Sir John Whitmore

GROW :

Goal –

Reality –

ptions –

Will –

Goal

60 , , , (2010): , , .281

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SMART

**S – Specific.**

**– Measurable.**

**– Achievable.**

**R – Realistic.**

**– Time Phased.**

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### UTCOMES

### UTCOMES

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(objectives) – / .

„Goal

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GROW

**U (understand the reasons)** –

**T (take stock of the present situation)** –

**C (clarify the gap)** –  
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(option generation) –

**M (motivation)** –

**E (enthusiasm/encouragement)** –

**S (support)** –

UTCOMES

GROW :

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GROW

UTCOMES

LAKOCA (Sims, 2002)

Listen – ;

Ask question – ;

ey – ;

Options – ?;

Consequences – ?;

Ask which option they will chose –

COACH (Fleming & Taylor, 1998)

Competency – , ;

Outcomes – , ;

Action – , ;

Checking – ,

61

61 (2010):  
.296

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62 , , (2010):  
 , , .299





PEER COACHING	SPECIALIST COACHING
<p>Making reciprocal commitment to an episode of professional learning –</p> <p>Looking for and giving moral support –</p> <p>Establishing confidence in relationship –</p> <p>Sharing interpretation – ( )</p> <p>Creating trust –</p> <p>Focusing on specific aspects of practice –</p> <p>Agreeing a learning agenda –</p> <p>Listening -</p> <p>Experimenting -</p> <p>Empathising -</p> <p>Creating learning environment –</p> <p>Collaborative teaching –</p> <p>Supporting &amp; reinforcing –</p> <p>Enabling risk taking &amp; reflection –</p> <p>Clarifying learning objectives –</p> <p>Demonstrating -</p> <p>Reviewing the affects of change -</p> <p>Providing information –</p> <p>Observing -</p> <p>Promoting self-awareness –</p> <p>Joint planning –</p> <p>Questioning -</p>	<p>Developing a capacity for change</p> <p>Evaluating -</p> <p>Making suggestions –</p> <p>Articulating practice</p> <p>Sharing interpretation – ( )</p> <p>Creating trust –</p> <p>Focusing on specific aspects of practice –</p> <p>Agreeing a learning agenda –</p> <p>Listening -</p> <p>Experimenting -</p> <p>Empathising -</p> <p>Creating learning environment –</p> <p>Collaborative teaching –</p> <p>Supporting &amp; reinforcing –</p> <p>Enabling risk taking &amp; reflection –</p> <p>Clarifying learning objectives –</p> <p>Demonstrating -</p> <p>Reviewing the affects of change -</p> <p>Providing information –</p> <p>Observing -</p> <p>Promoting self-awareness –</p> <p>Joint planning –</p> <p>Questioning -</p>

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<sup>64</sup> Thomas, Keneth W., and Betty A. Velthouse. "Cognitive elements of empowerment: An Interpretive Model of Intrinsic Task Motivation." *Academy of management review* 15, no. 14 (1990): 672

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<sup>65</sup><http://www.merriam-webster.com/dictionary/motivation>,  
<sup>66</sup> , . (2011)



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67 - (1995):  
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 68 ” , .247

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71

<sup>69</sup> Walker, James . (1995):The Psychology of learning: Principles and Processes. New Jersey: Prentice Hall, .107-109

<sup>70</sup> Walker, James . (1995):The Psychology of learning: Principles and Processes. New Jersey: Prentice Hall,107-109, 83-106

<sup>71</sup> Jarvis, Matt. (2000): Theoretical approaches in Psychology. London: Routledge, .50

(self-determination theory, SDT)

(Richard M. Ryan)

(Edward L. Deci)

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<sup>72</sup> , .,(2003): , 315-338



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<sup>73</sup> Stone, Deci and Ryan, Beyond Talk: Creating autonomus motivation through self- determination theory  
<sup>74</sup> Ryan, Richard M., and Edward Deci L. (2000): "Intrinsic and extrinsic motivation:Clasical D finitions and New Directions." Contemporary education psychology .25

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<sup>75</sup> Amabile, Motivational Synergy: Towards new conceptualization of intrinsic and extrinsic motivation in the workplace  
Amabile, Teresa. (1993): „Motivational Synergy: Towards new conceptualization of intrinsic and extrinsic motivation in the workplace.” Human Resource Management review 3, no.3 .185

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(deadlines),

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„burn-out“, ,

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<sup>76</sup> Matsumura, Ryohei and Norimasa Kobayashi (Jan. 2008):„Are increased costs worth paying toraise non-monetary utility?:Analysis of intrinsic motivation and fringe benefits.” *International Transactions in operational research* 15, .705-715

<sup>77</sup> Carr, Alan, (2011):*Positive Pychology*, 2<sup>nd</sup> ed. London: Routledge, .125

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78 , „ , ., (2015)

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( .work engagement)

( . employee engagement).

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<sup>79</sup> <http://www.merriam-webster.com/dictionary>

<sup>80</sup> Schaufeli, Wilmar B. and Arnold Bakker B., "Defining and Measuring work engagement: Bringing clarity to the concept" in Work Engagement: Handbook of Essential theory and research

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<sup>82</sup> The Happiness Choice (Wiley 2013) by Marilyn Tam, Ph.D

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„environmental protection“  
„ecology“ „environment“

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(2004): „

( , 2003; Palmer, 2003 .)



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<sup>83</sup> (Glikson, 1971).



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		1	2	3	4	
1		2	5	14	15	<b>3.17</b>
		2	5	10	7	2.92
				4	8	3.67
2		1	6	13	16	<b>3.22</b>
		1	6	9	8	3.00
				4	8	3.67
3		2	9	16	9	<b>2.89</b>
		2	9	8	5	2.67
				8	4	3.33
4		2	7	20	7	<b>2.89</b>
		2	7	12	3	2.67
				8	4	3.33
5	, ,	7	10	15	4	<b>2.17</b>
		7	10	4	3	2.13
				11	1	3.08
6	, -	1	2	3	4	
6.1		3	8	13	12	<b>2.94</b>
		3	5	11	5	2.75

			3	2	7	3.33
6.2		3	8	14	11	<b>2.92</b>
		3	7	9	5	2.67
			1	5	6	3.42
6.3		4	8	15	9	<b>2.81</b>
		4	7	9	4	2.54
			1	6	5	3.33
6.4		3	6	17	10	<b>2.94</b>
		3	5	11	5	2.75
			1	6	5	3.33
7		1	2	3	4	
7.1		2	9	13	12	<b>2.97</b>
		2	8	8	6	2.75
			1	5	6	3.42
7.2		2	8	15	11	<b>2.97</b>
		2	7	10	5	2.75
			1	5	6	3.42
7.3		2	7	16	11	<b>3.00</b>
		2	6	11	5	2.79
			1	5	6	3.42
7.4		3	8	12	13	<b>2.97</b>
		3	7	7	7	2.75
			1	5	6	3.42
8			6	18	12	3.00
			5	12	7	2.88
			1	6	5	3.33
9		1	2	3	4	
9.1		2	5	14	15	<b>3.17</b>
		2	5	10	7	2.92
				4	8	3.67
9.2		3	8	12	13	<b>2.97</b>
		3	8	8	5	2.63
				4	8	3.67
9.3		1	6	13	16	<b>3.22</b>
		1	6	9	8	3.00
				4	8	3.67
9.4		1	4	13	18	<b>3.33</b>
		1	4	10	9	3.13
				3	9	3.75
9.5		1	3	14	18	<b>3.36</b>

		1	3	11	9	3.17
				3	9	3.75
9.6		2	6	13	15	<b>3,14</b>
		2	6	9	7	2.88
				4	8	3.67
10		3	6	15	12	<b>3.00</b>
		3	5	11	5	2.75
			1	4	7	3.42
11		2	8	19	7	<b>2.86</b>
		2	7	11	4	2.71
			1	8	3	3.08
12		2	4	19	11	<b>3.08</b>
		2	3	9	10	3.13
			1	10	1	3.00
13		2	6	21	7	<b>2.92</b>
		2	5	11	6	2.88
			1	10	1	3.00
14		3	9	15	9	<b>2.83</b>
		3	5	11	5	2.75
			4	4	4	3.00
15		3	6	18	9	<b>2.92</b>
		3	5	10	6	2.79
			1	8	3	3.08
16		3	7	15	11	<b>2.94</b>
		3	5	10	6	2.79
			2	5	5	3.08
17		2	7	16	11	<b>3.00</b>
		2	6	13	3	2.71
			1	3	8	3.50
18	-	2	5	13	16	<b>3.19</b>
	-	1	5	15	15	<b>3.22</b>
	-	2	4	17	13	<b>3.14</b>
	-	1	5	18	12	<b>3.14</b>
		2	4	10	8	3.00
		1	4	11	8	3.08
		2	3	12	7	3.00
		1	4	13	6	3.00



			1	3	8	3.50
			1	4	7	3.42
			1	5	6	3.33
			1	5	6	3.33
19		3	5	13	15	<b>3.11</b>
		3	4	9	8	2.92
			1	4	7	3.42
20		2	6	16	12	<b>3.06</b>
		2	5	9	8	2.96
			1	7	4	3.17
21		2	5	17	12	<b>3.08</b>
		2	4	9	9	3.04
			1	8	3	3.08
22		2	6	16	12	<b>3.06</b>
		2	5	11	6	2.88
			1	5	6	3.33
23	’ ‘	3	5	13	15	<b>3.11</b>
	” – “	3	4	10	7	2.88
			1	3	8	3.50
24	’ ‘	2	6	11	17	<b>3.19</b>
	” – “	2	5	7	10	3.04
			1	4	7	3.42
25		2	7	12	15	<b>3.11</b>
		2	6	9	7	2.88
			1	3	8	3.50
26		2	7	14	13	<b>3.06</b>
		2	6	10	6	2.83
			1	4	7	3.42
27		1	7	14	14	<b>3.14</b>
		1	6	9	8	3.00
			1	5	6	3.33
28		1	5	16	14	<b>3.19</b>
		1	4	12	7	3.04
			1	4	7	3.42
29		2	7	13	14	<b>3.08</b>

		2	6	11	5	2.79
			1	2	9	3.58
30			5	13	18	<b>3.36</b>
			4	9	11	2.88
			1	4	7	3.42
31			2	14	20	<b>3.44</b>
			1	9	14	3.54
			1	5	6	3.33

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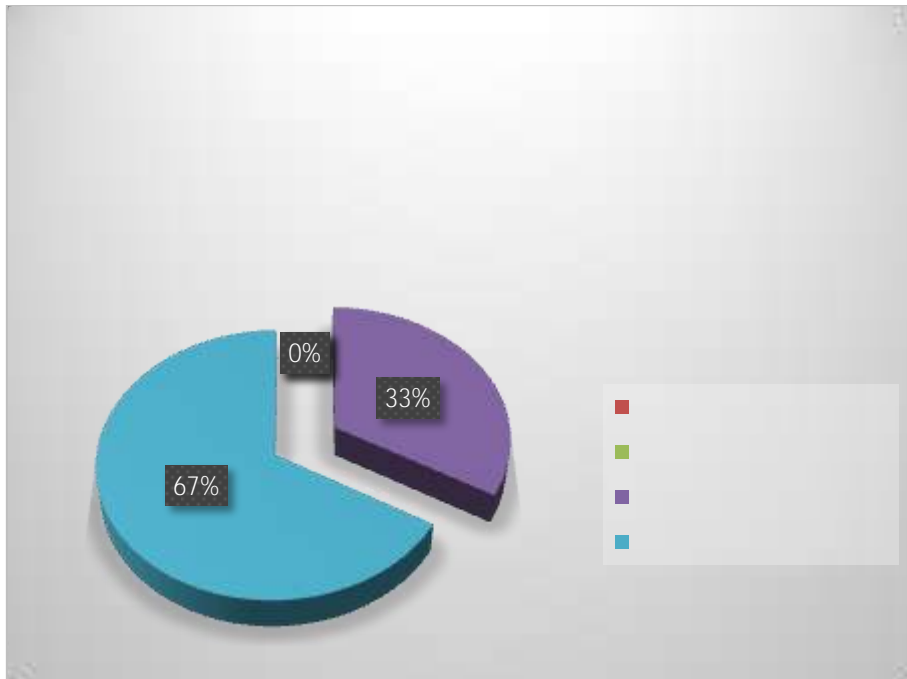
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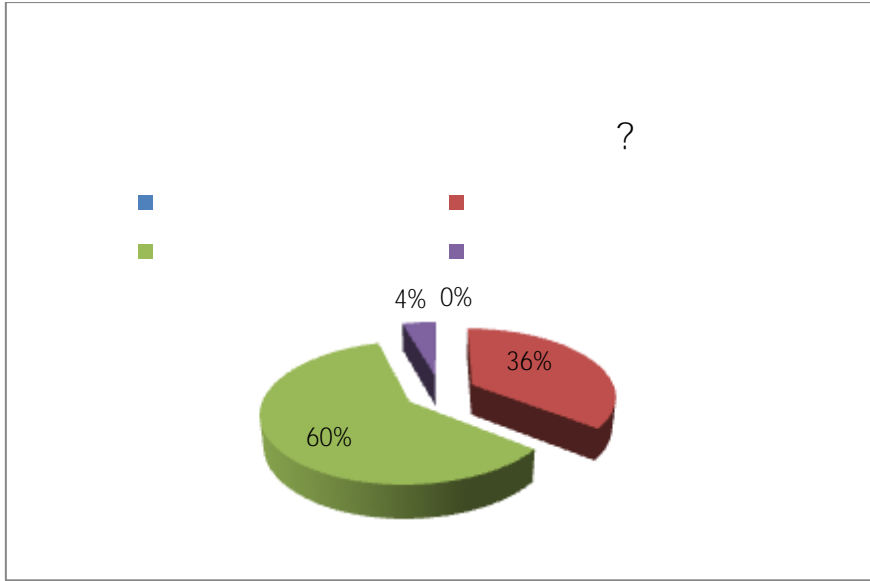
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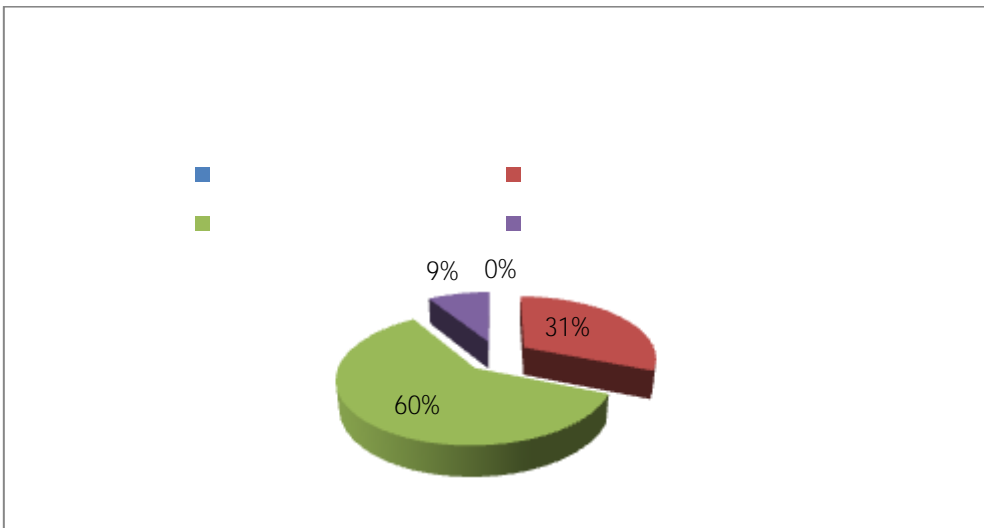
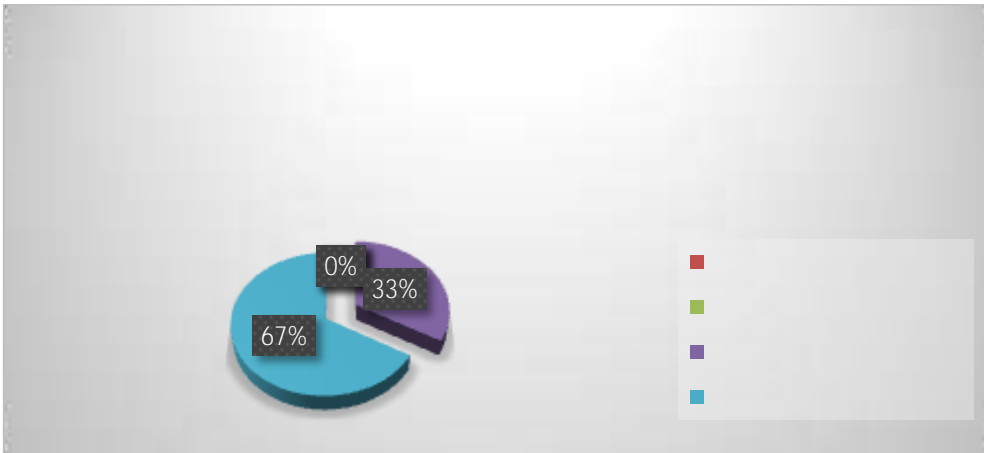
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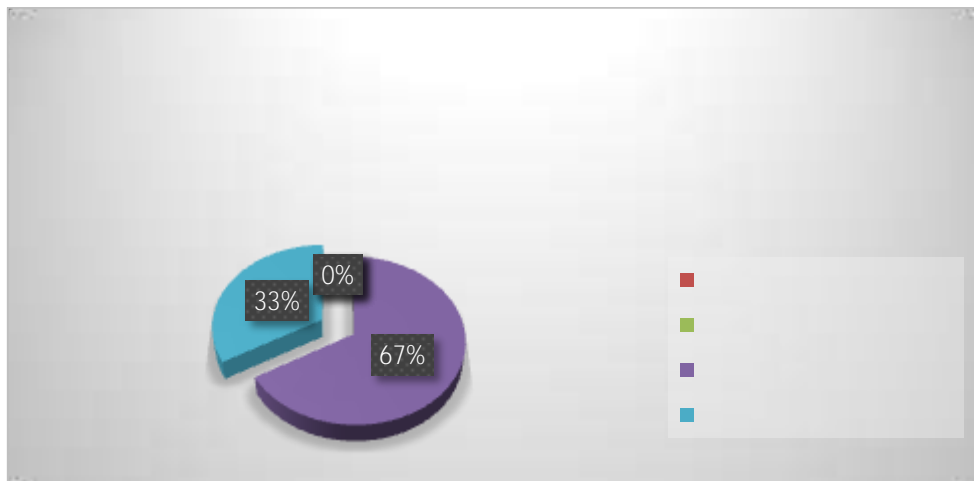
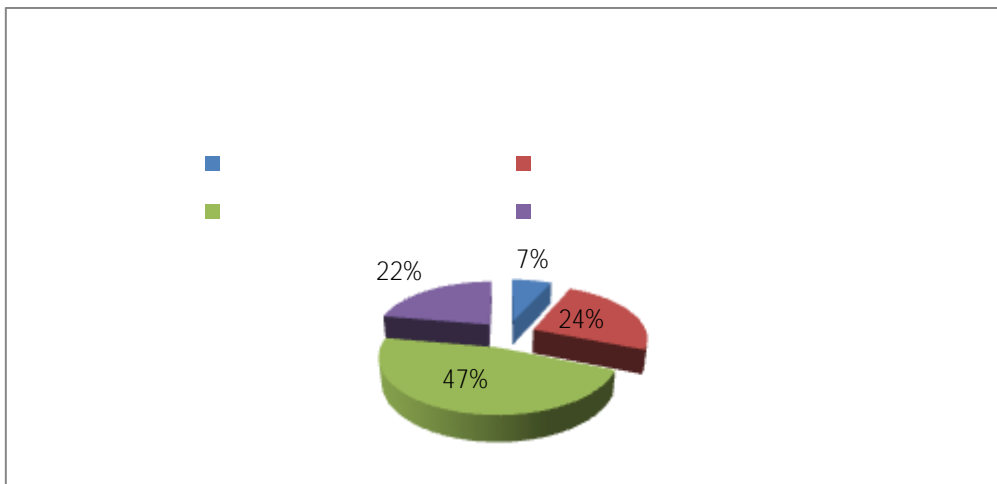
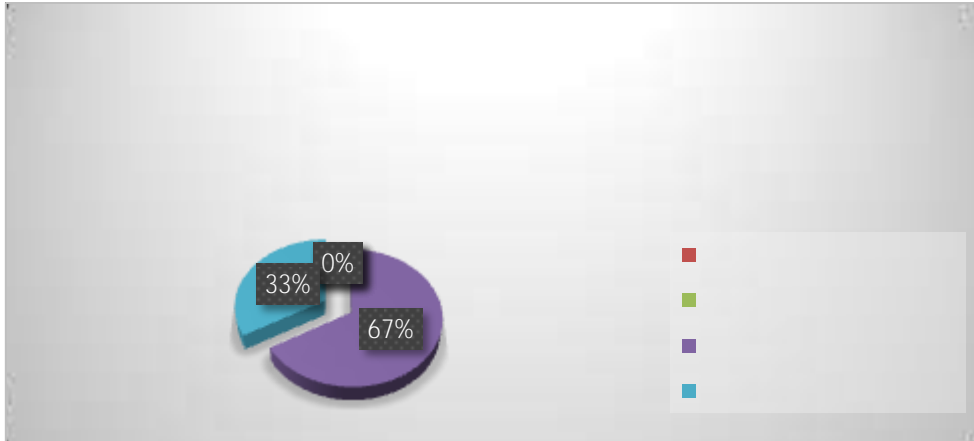


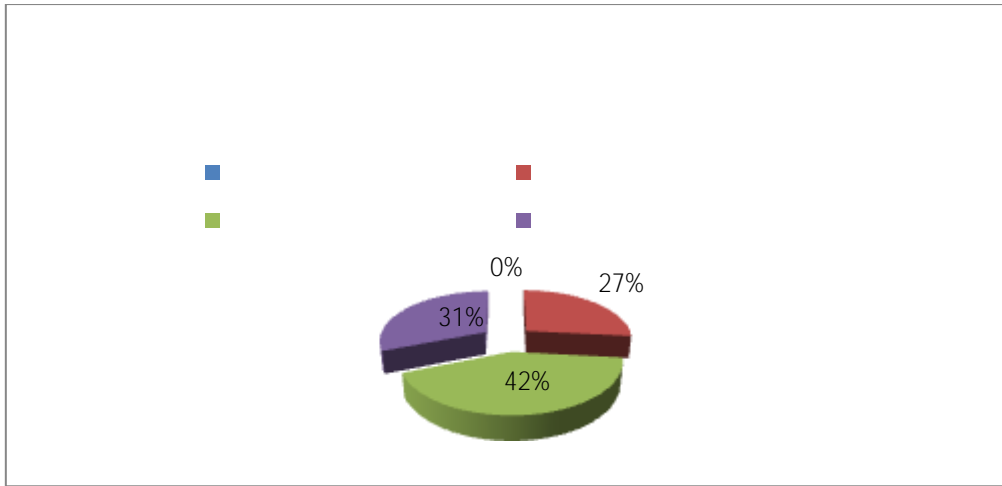
.2: ,,

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.5: „ ,

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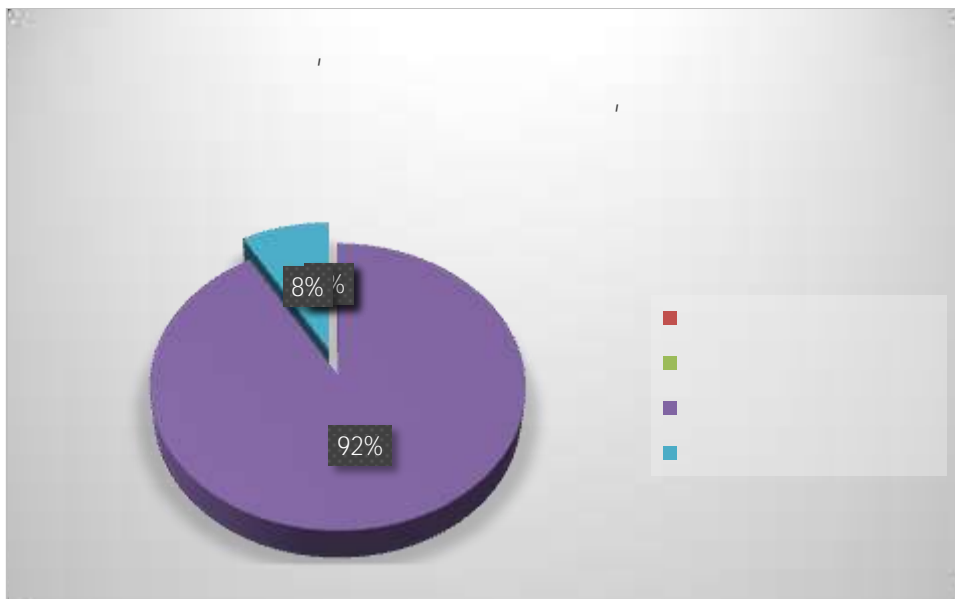
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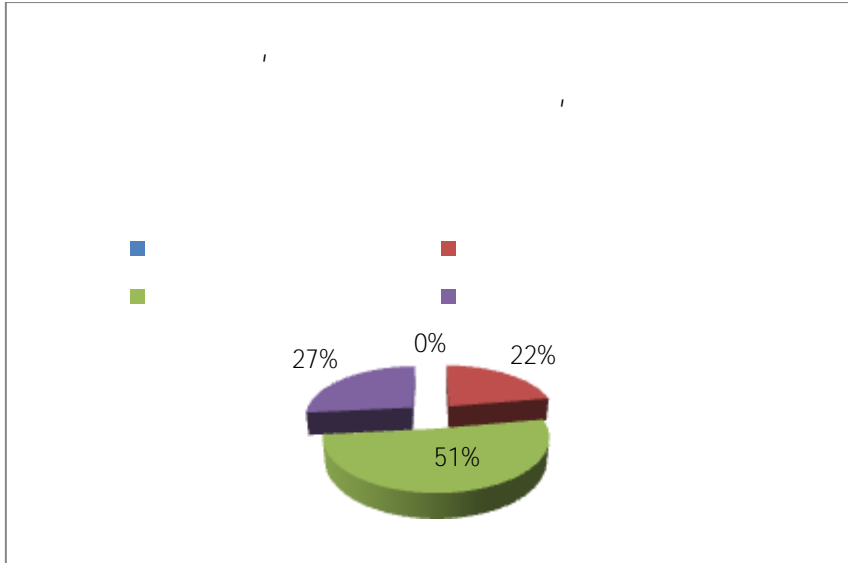
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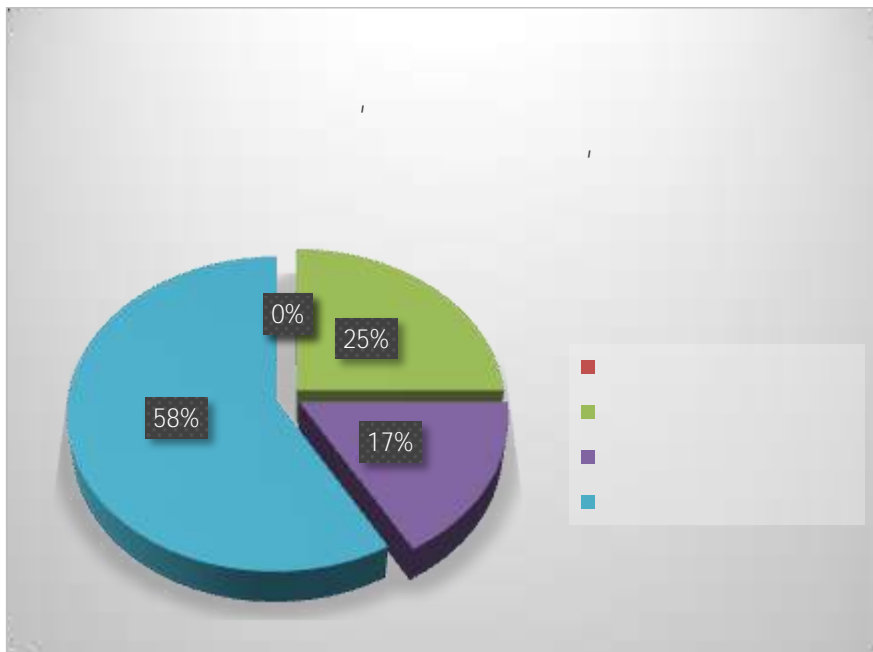
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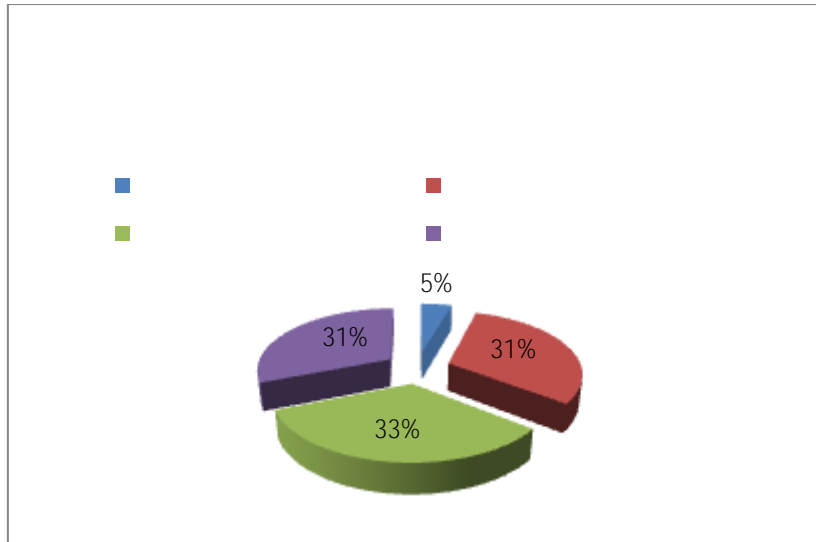
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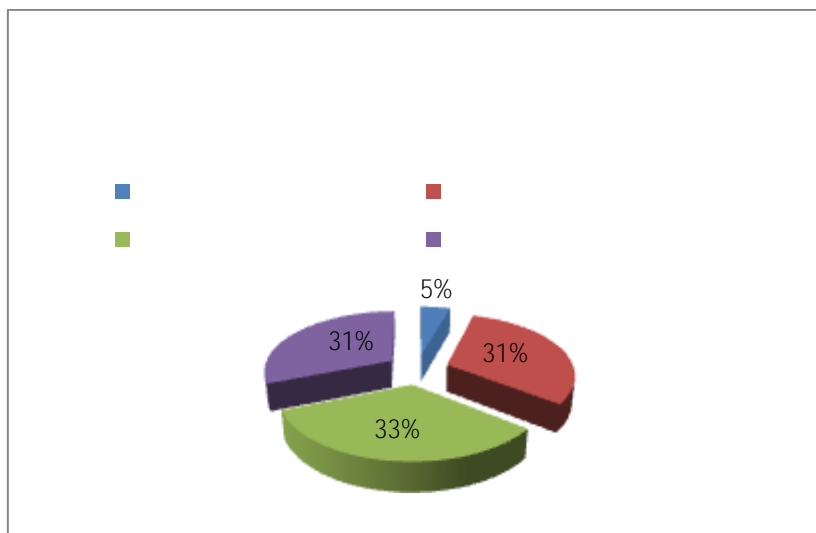
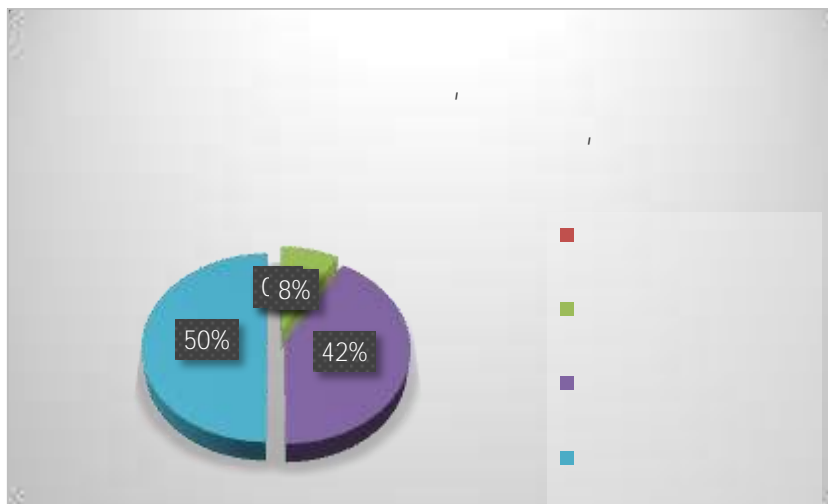


.6: „ , “ , : „ “ ( 2.75 3.33 )

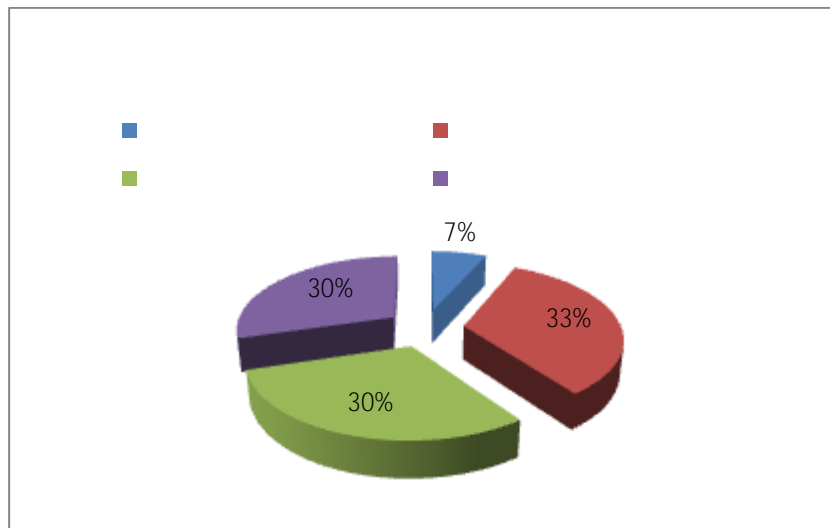
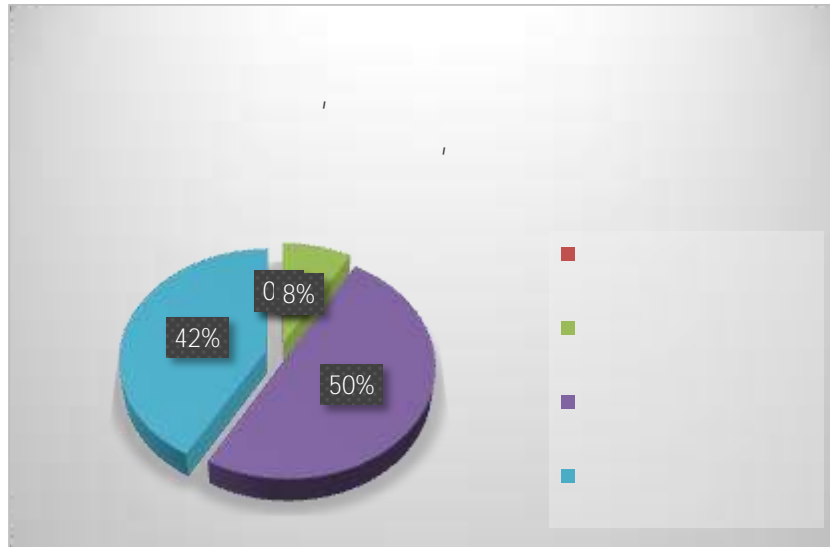




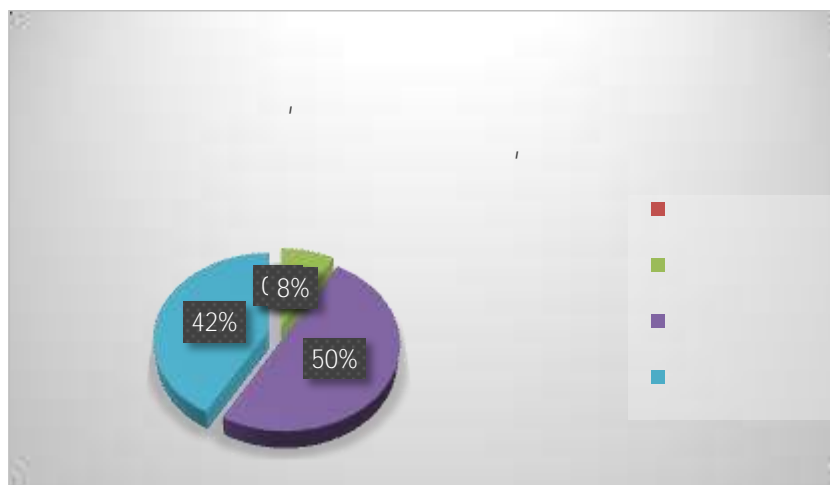
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3.42



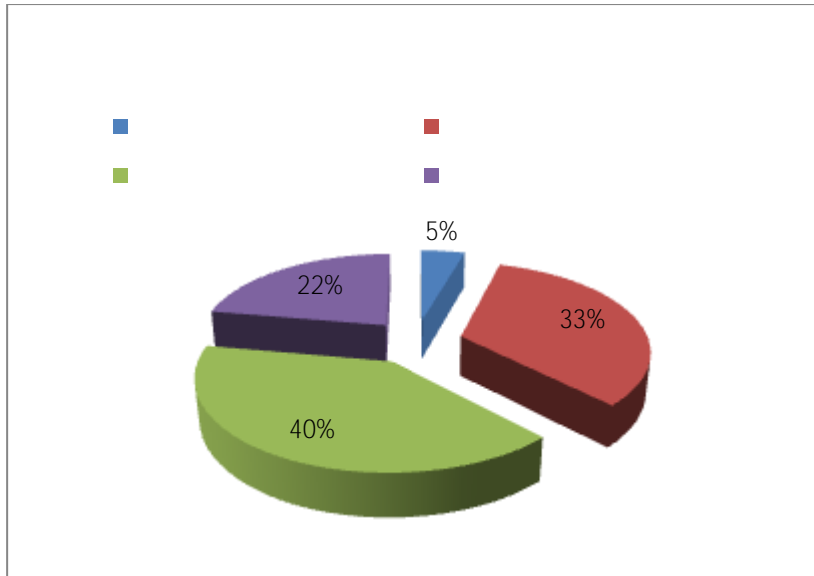
” ( 2.54 )  
3.33



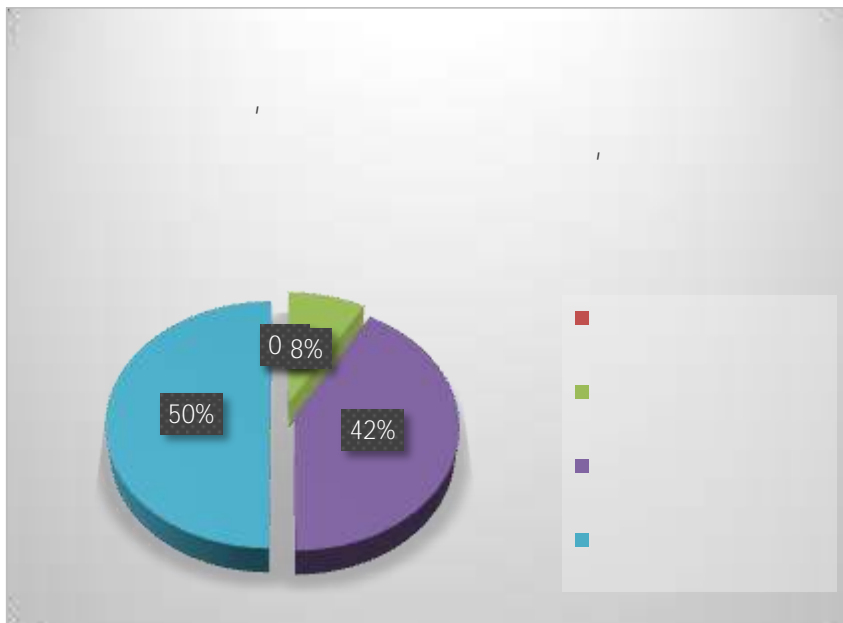
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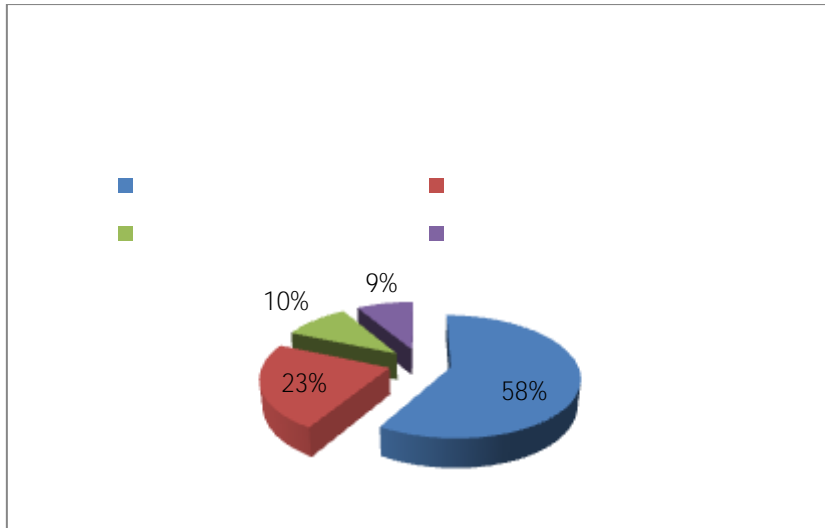






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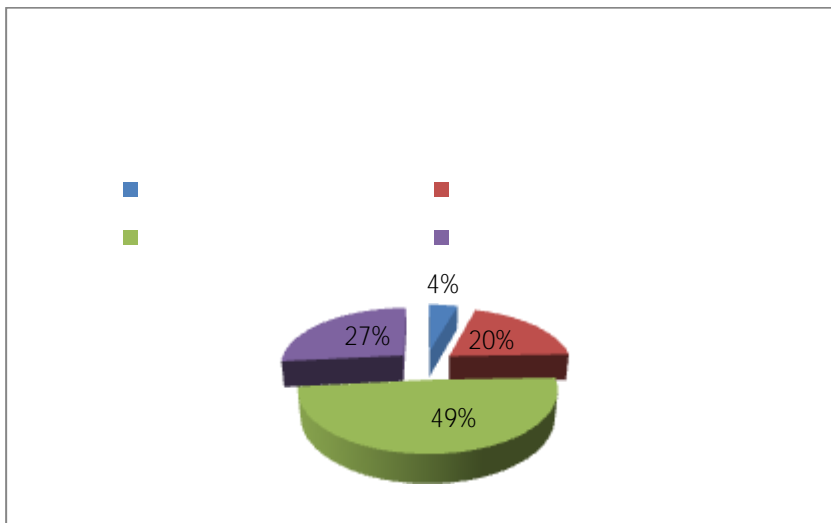
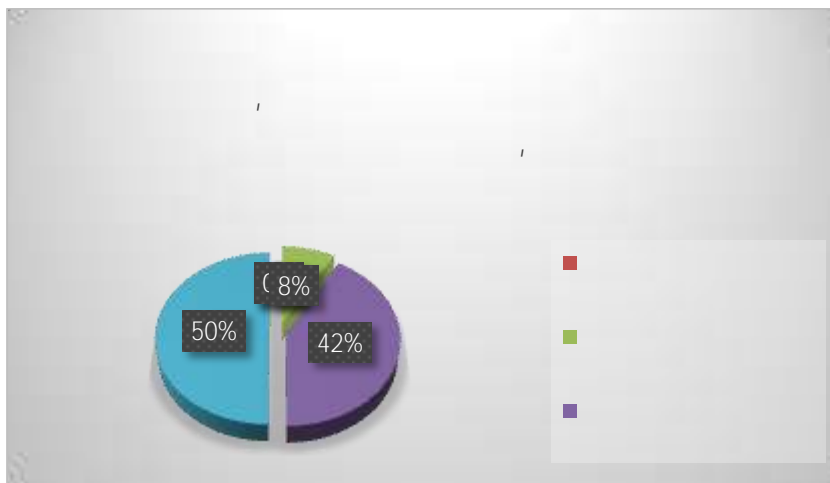




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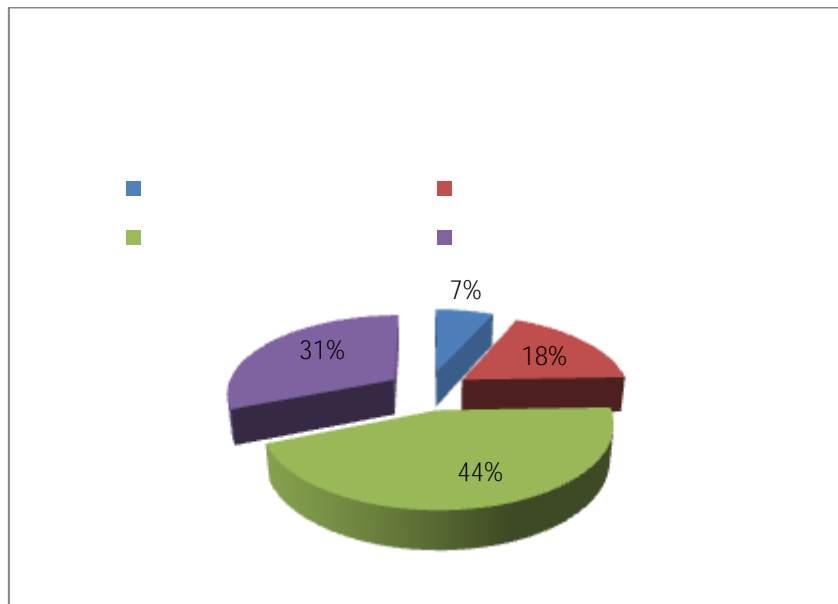
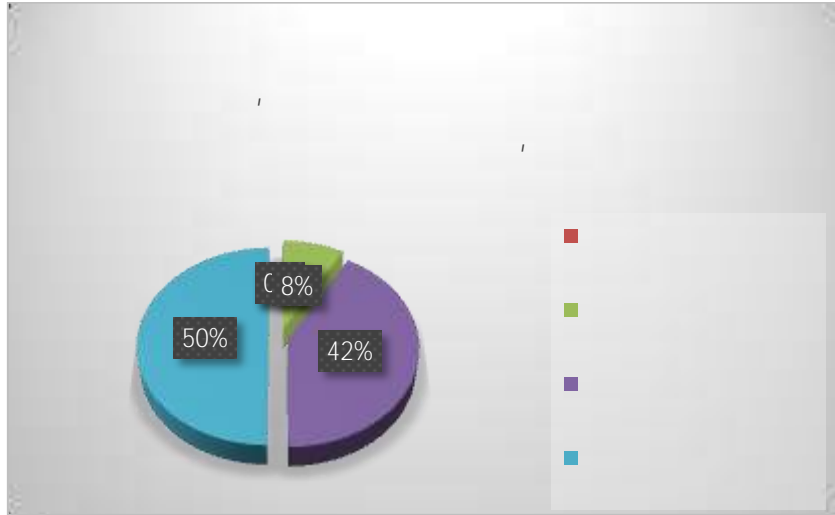
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( 2.79

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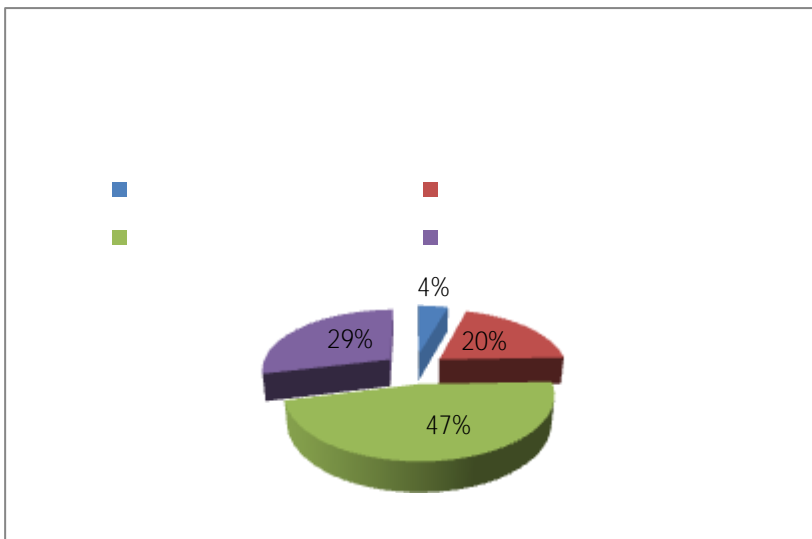
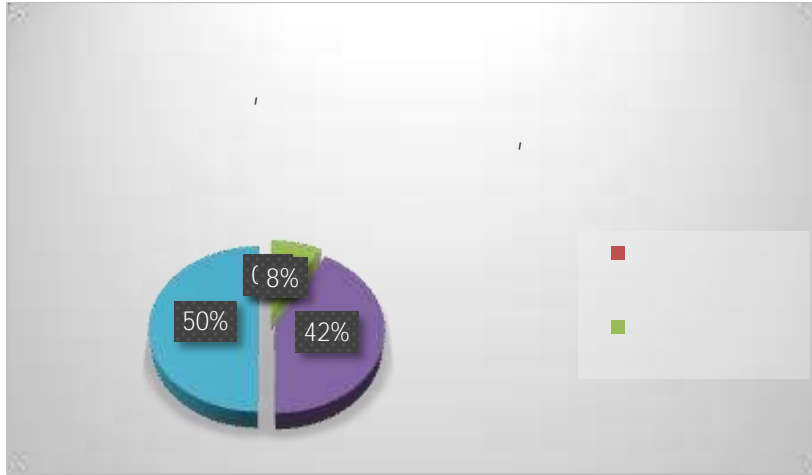
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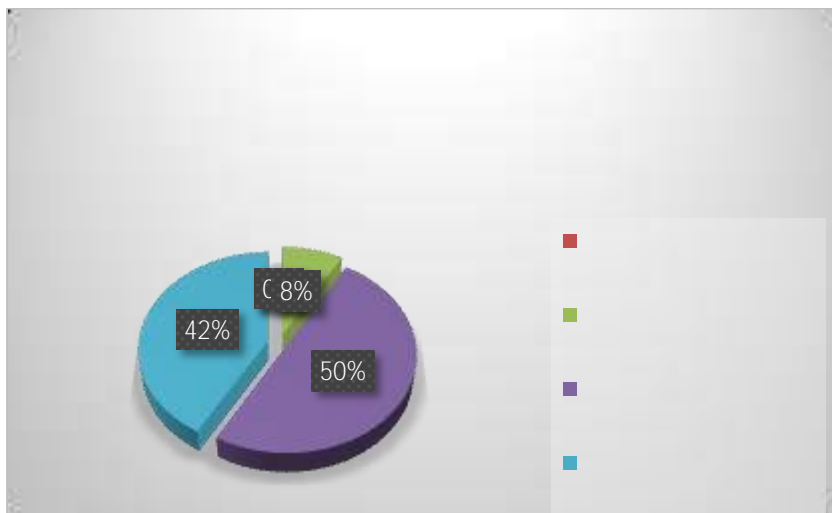


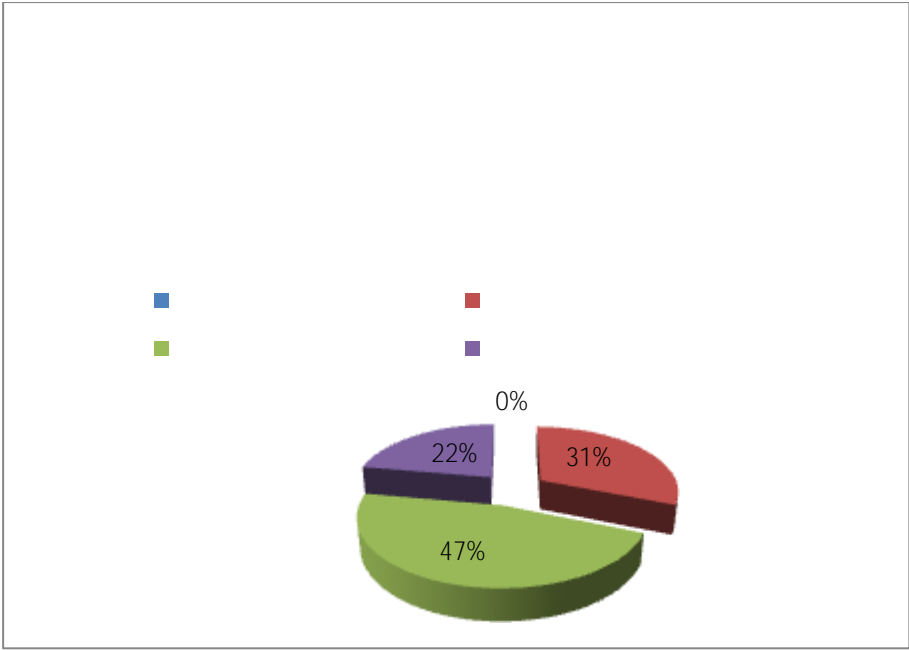
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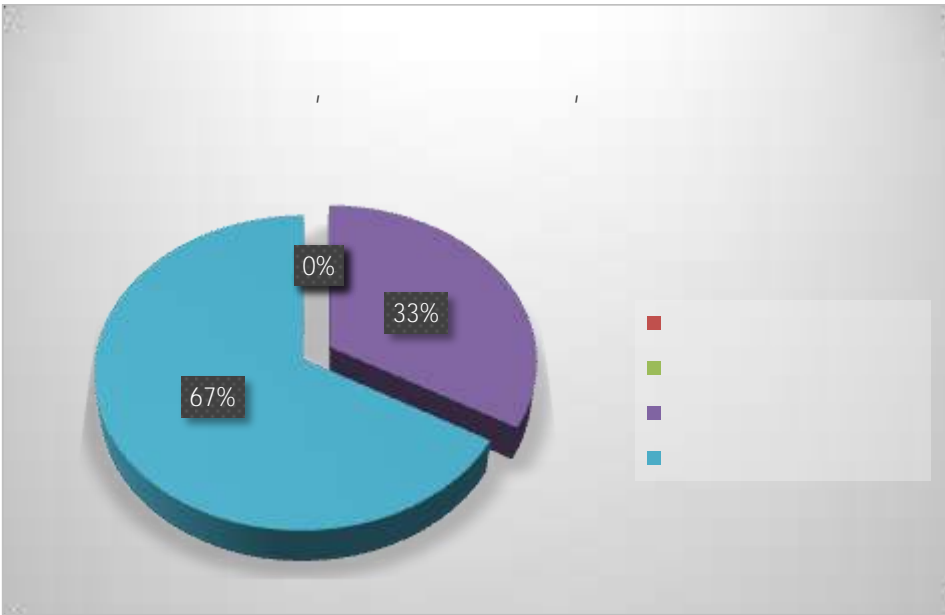
( 2.88)

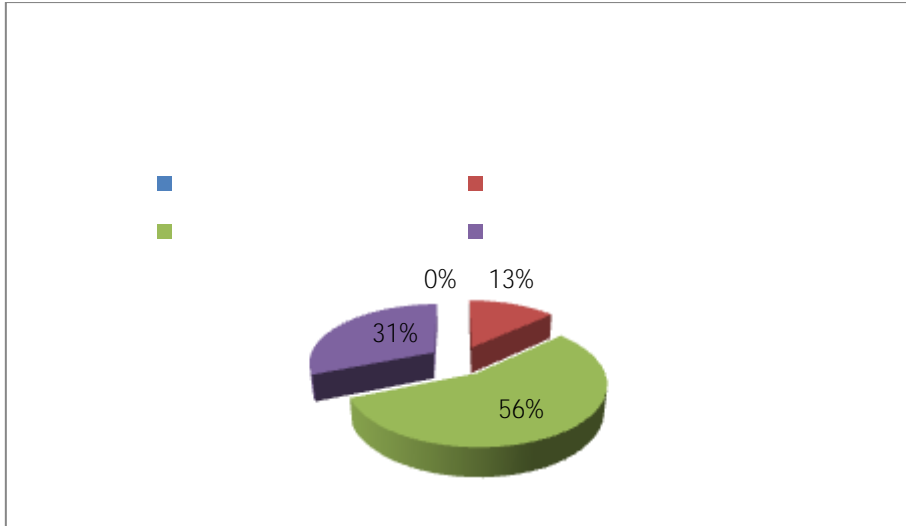
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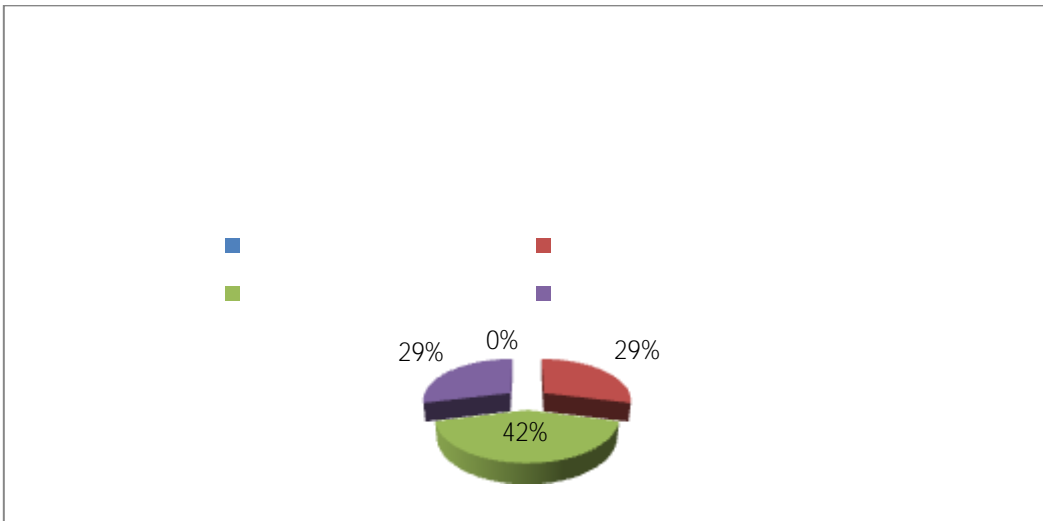
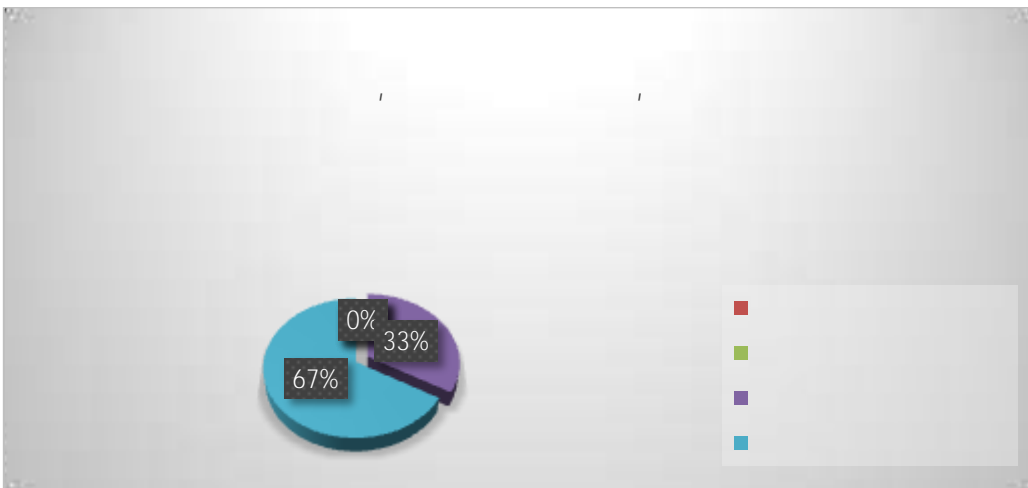


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2.92,  
- 3.67).



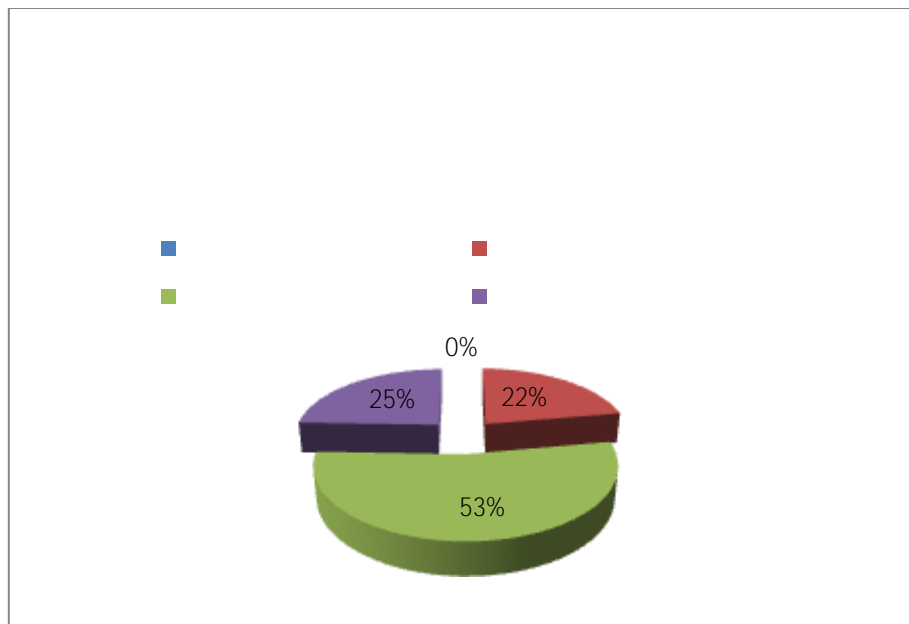
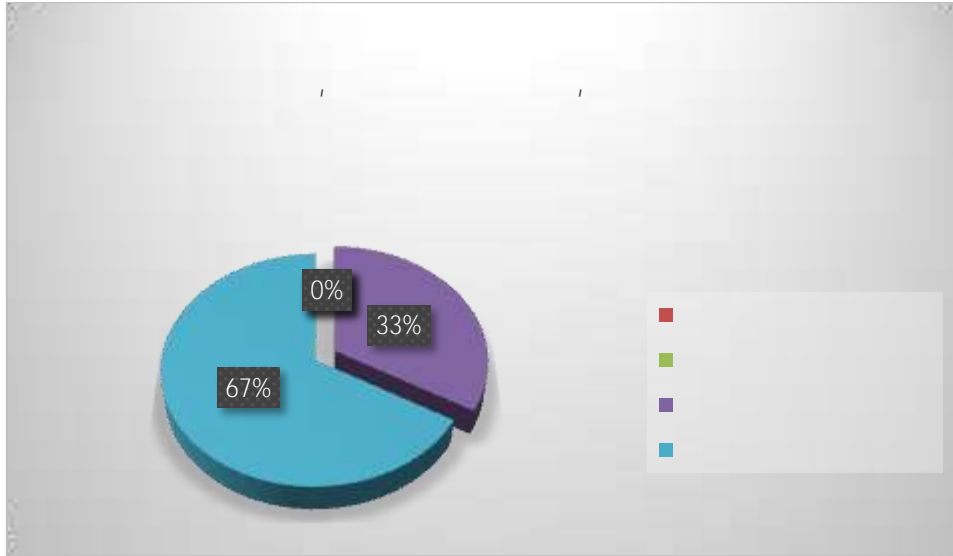


– 2.63,  
– 3.67.



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( 3.67)

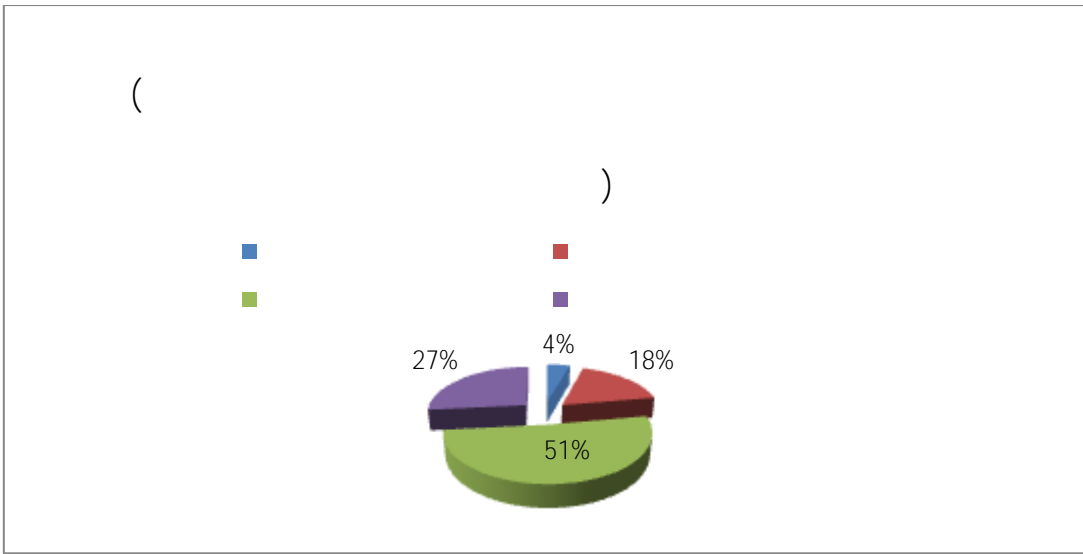
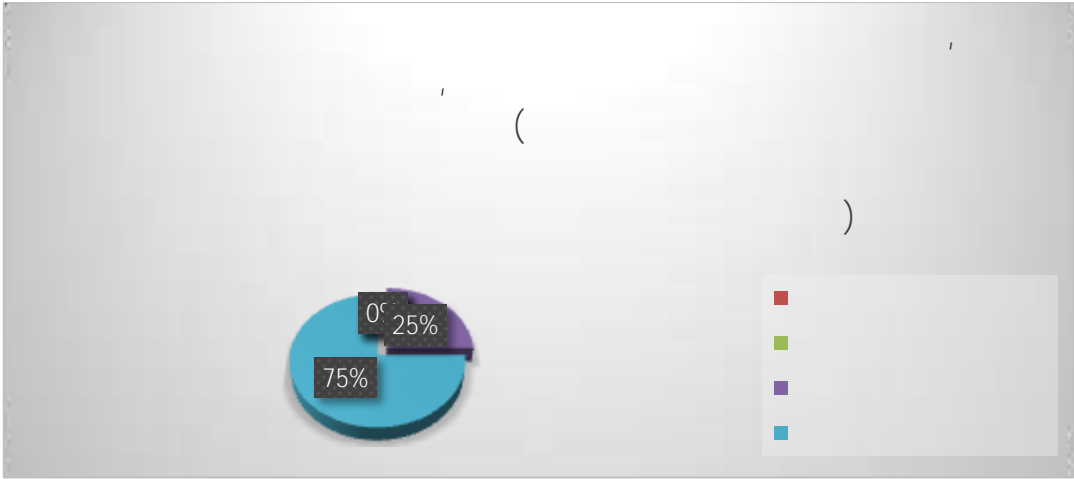


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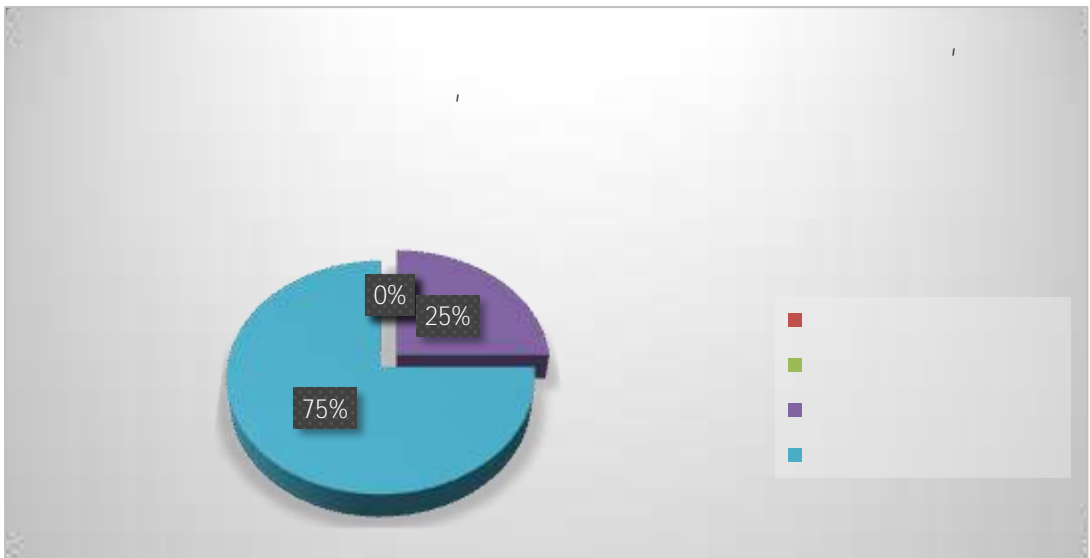
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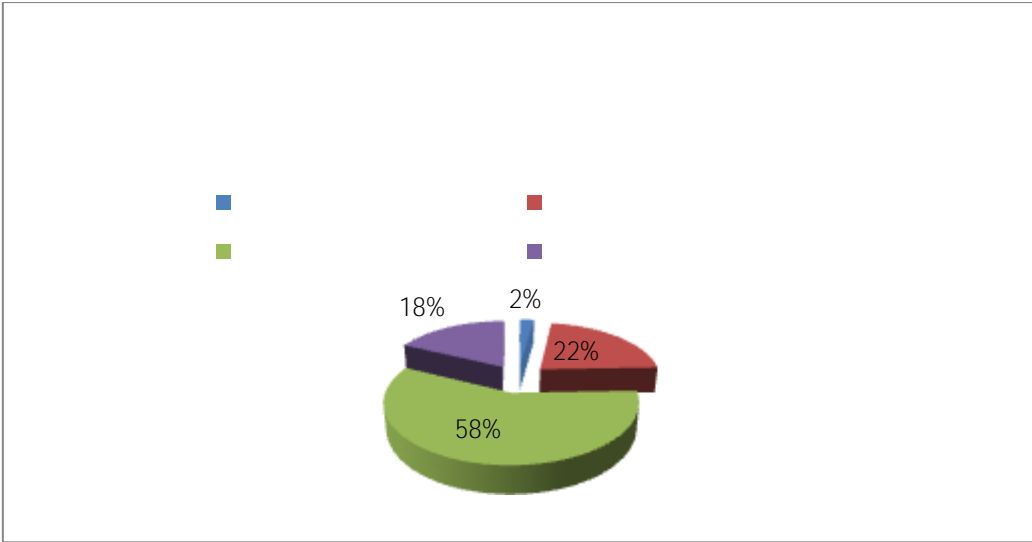
3.33).



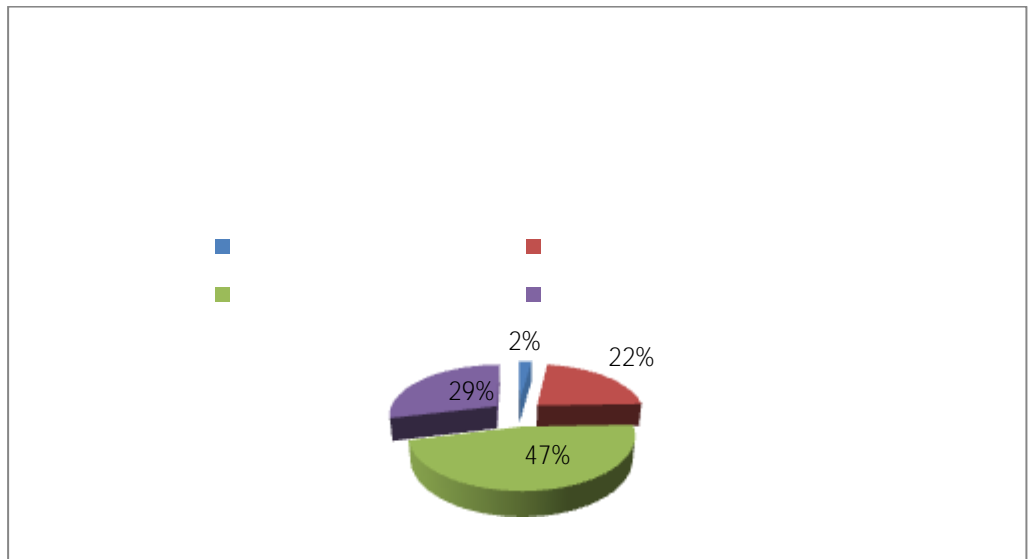
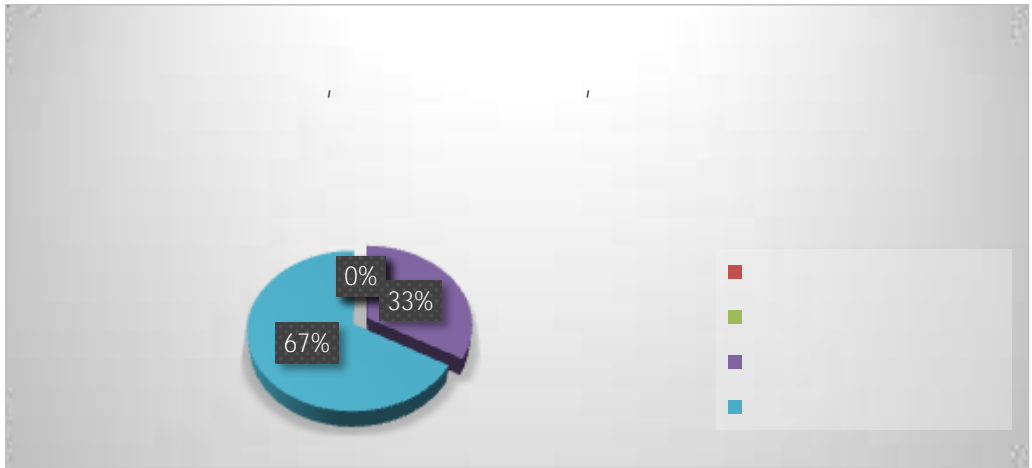
( 3.36)







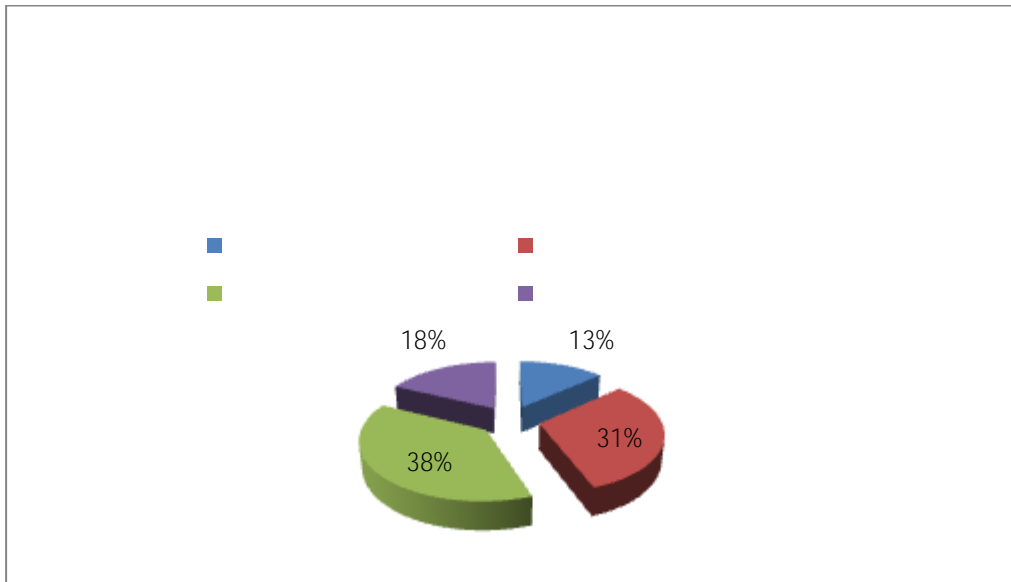
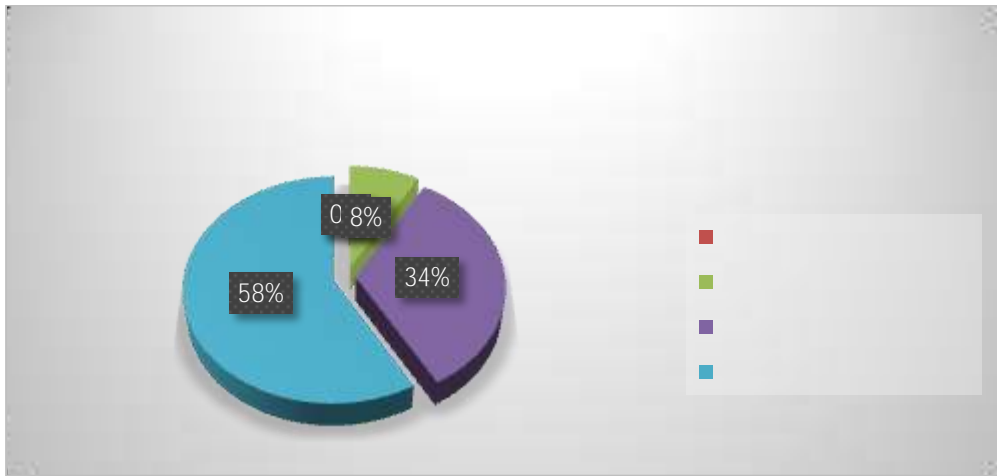
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— 3.67)



.10: „

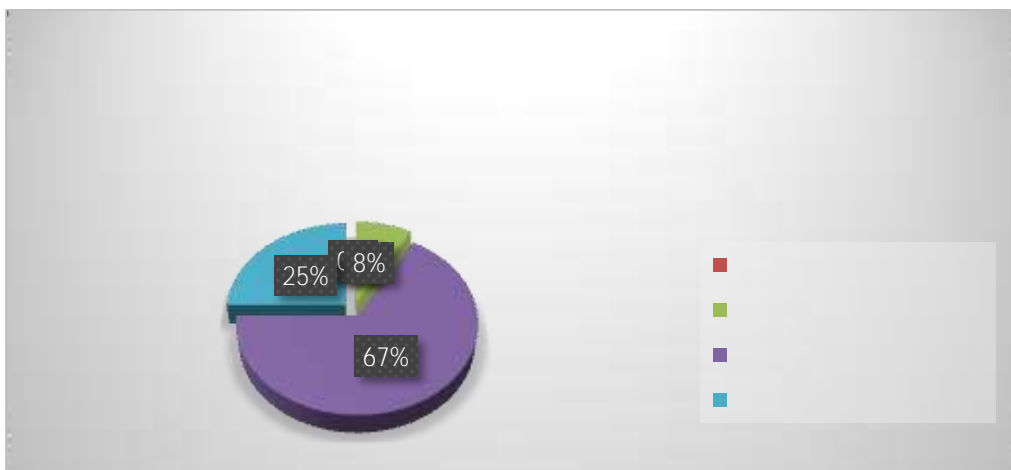
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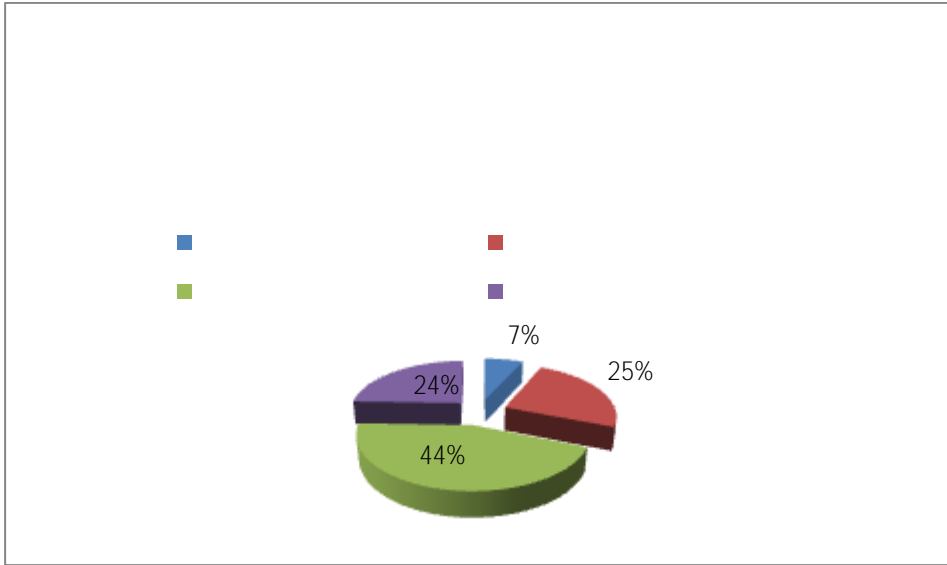
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.11,

( 2.86).



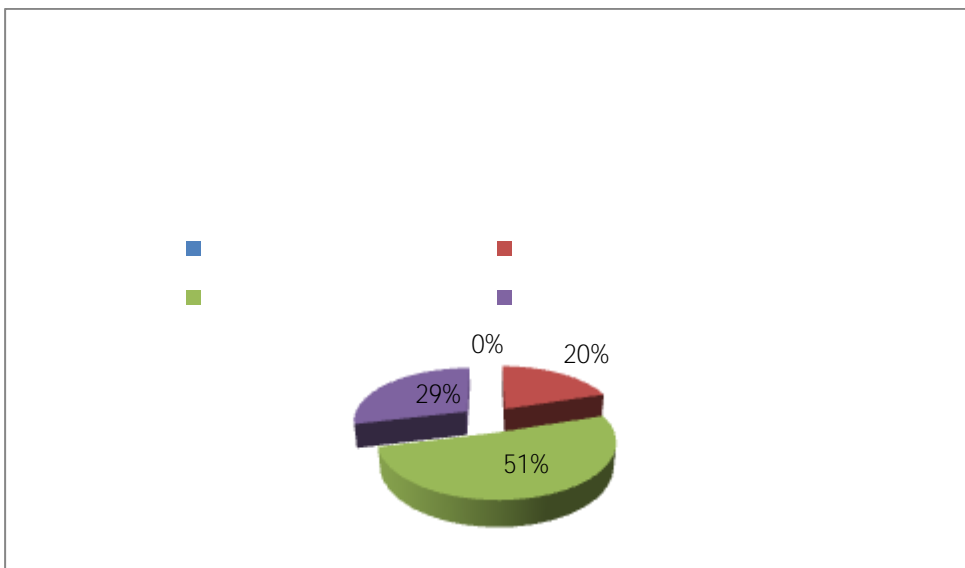
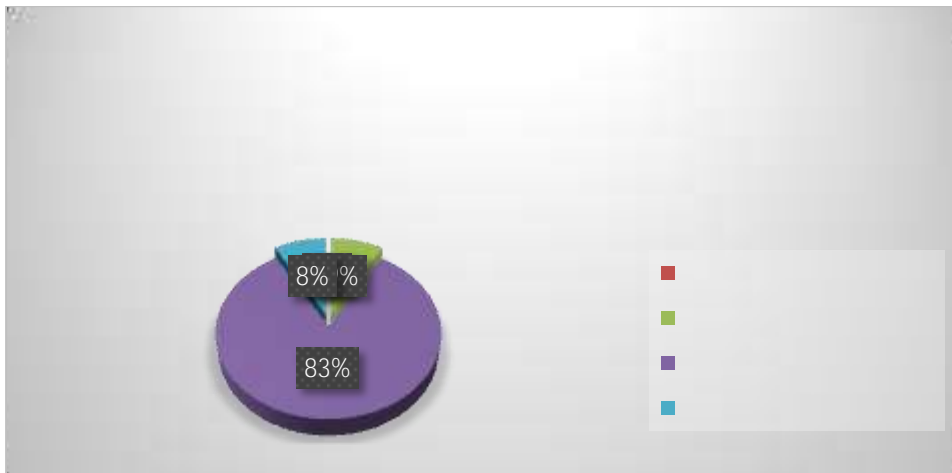


.12: „

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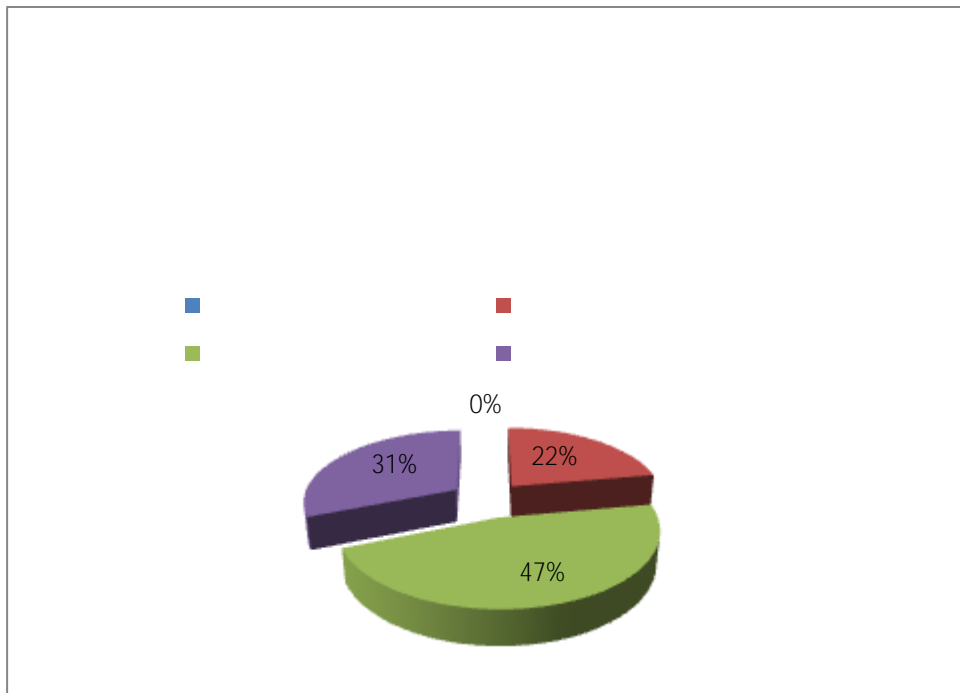
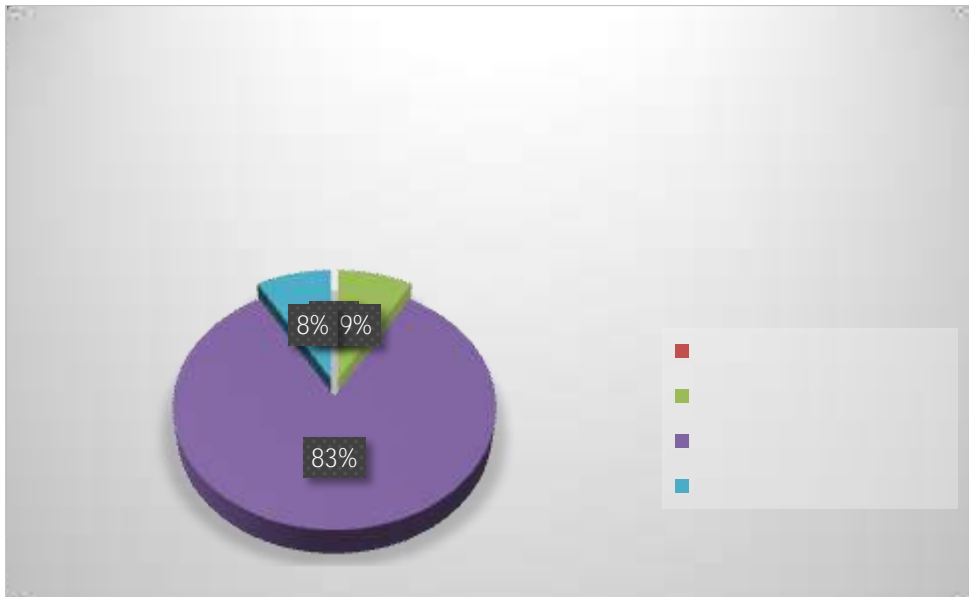
( 3.08).



.13: „

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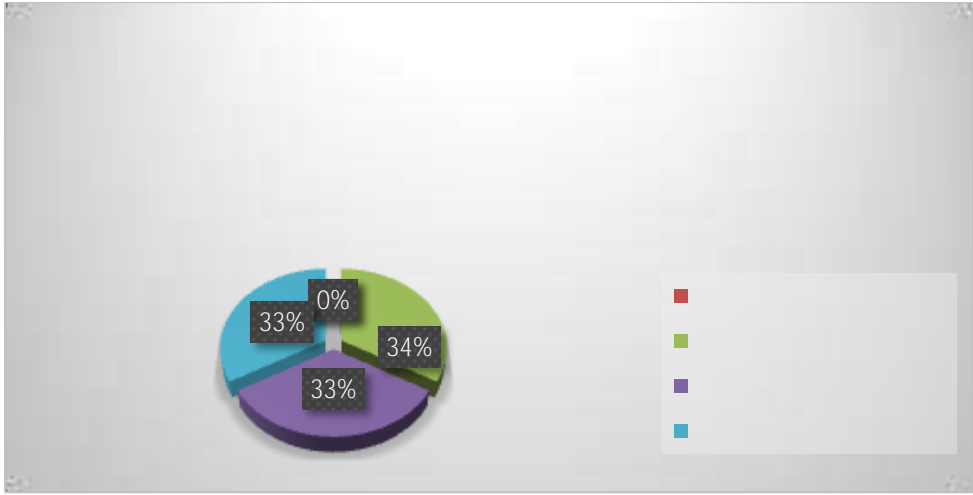
( 2.92).



.14: „

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2.83).

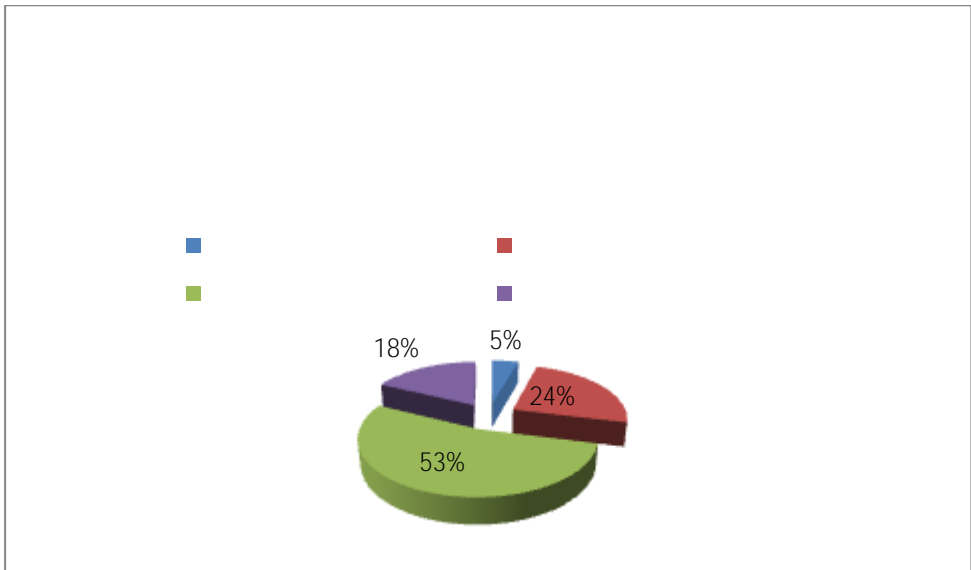
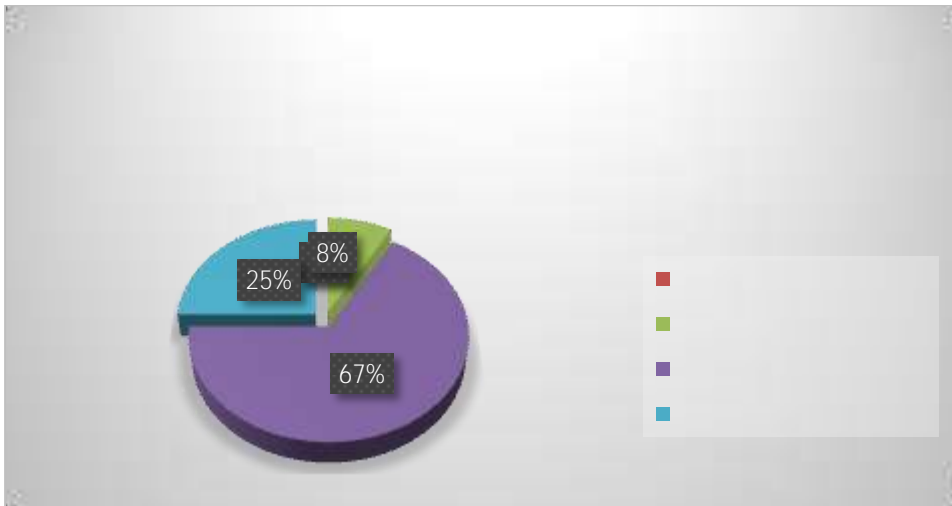


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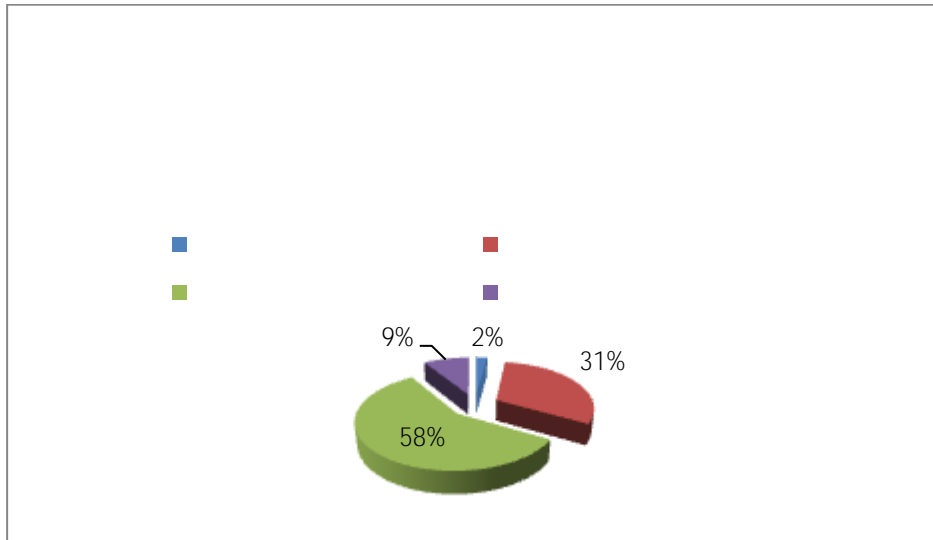
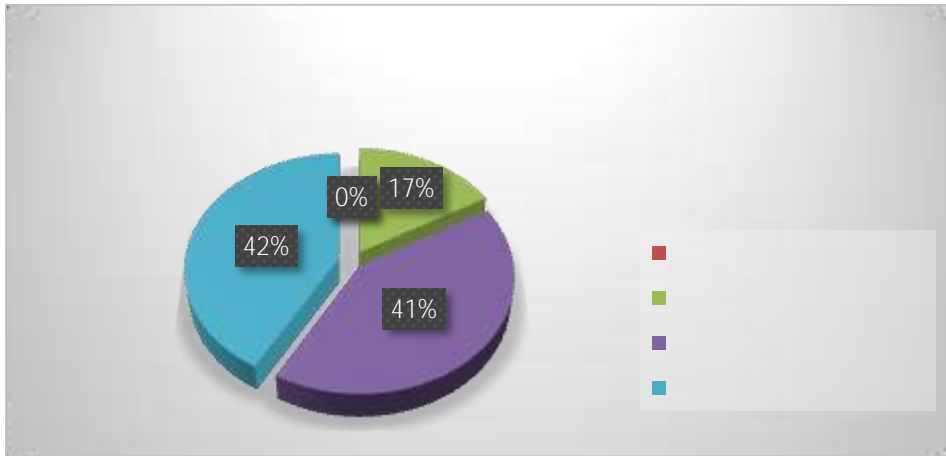
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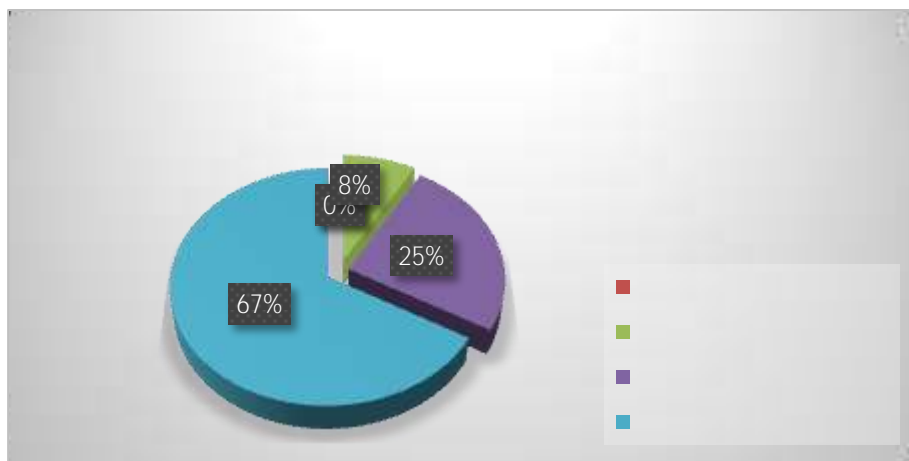
( 2.92).

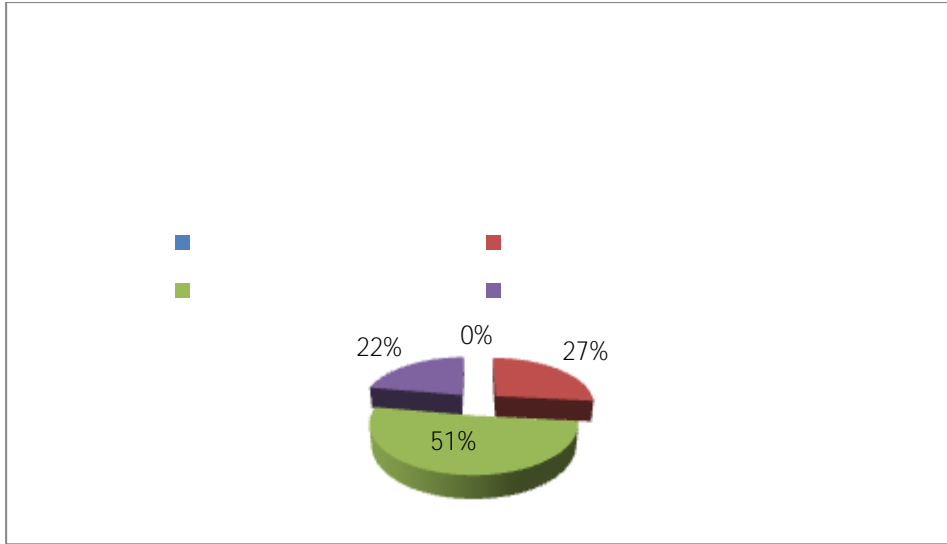


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.17: „  
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.18: „

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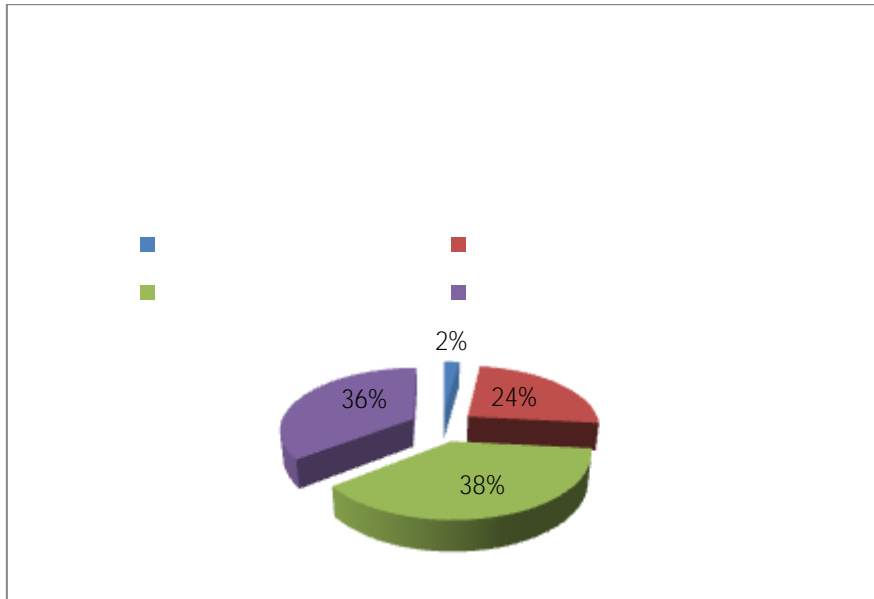
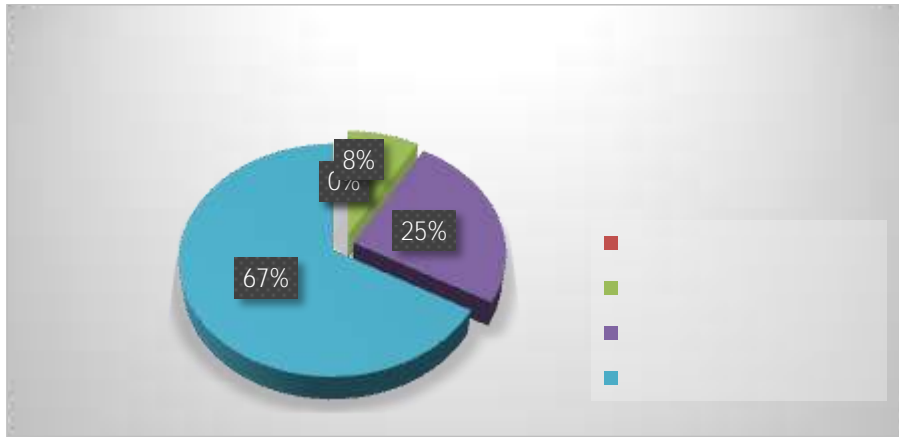
:

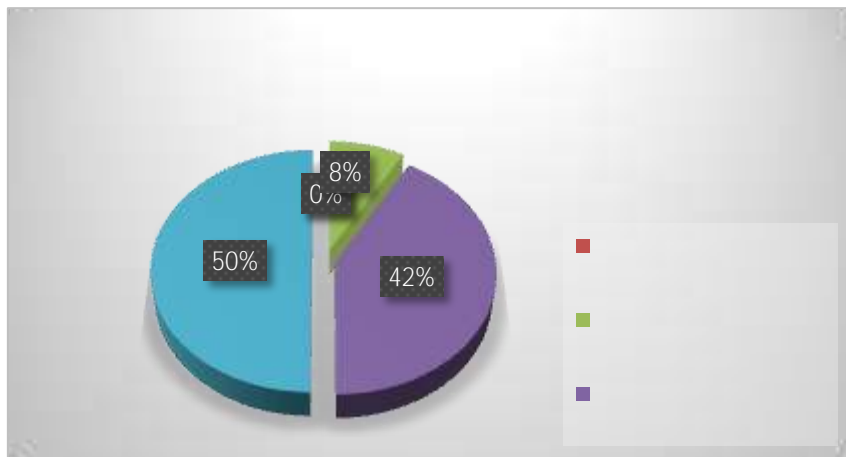
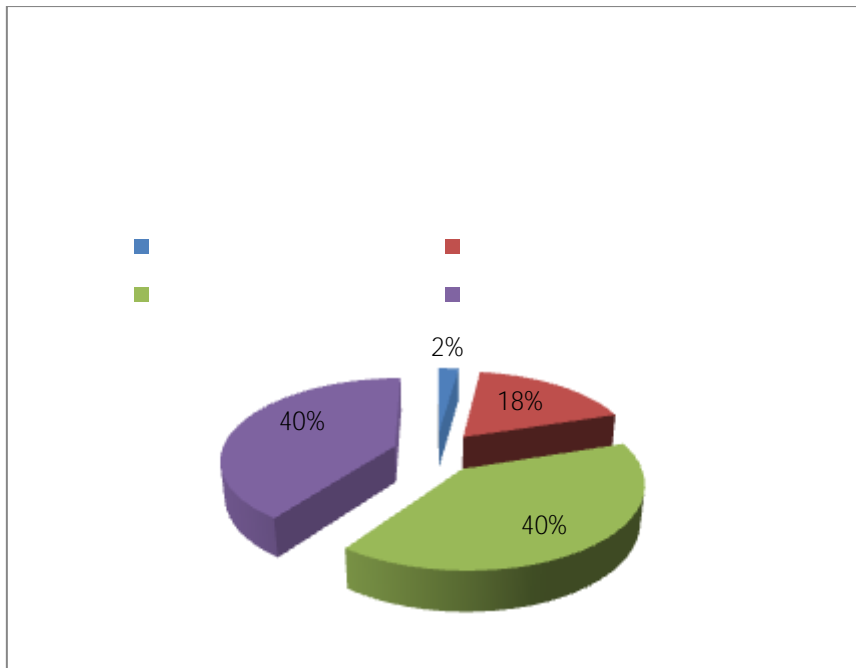
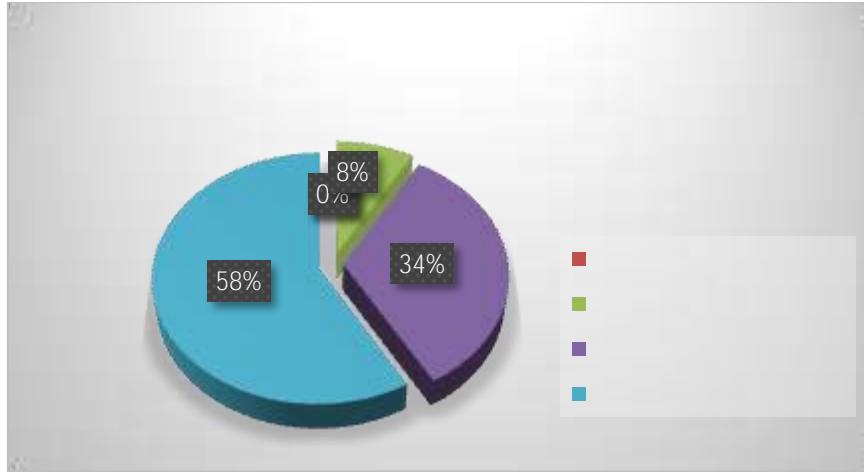
“

—

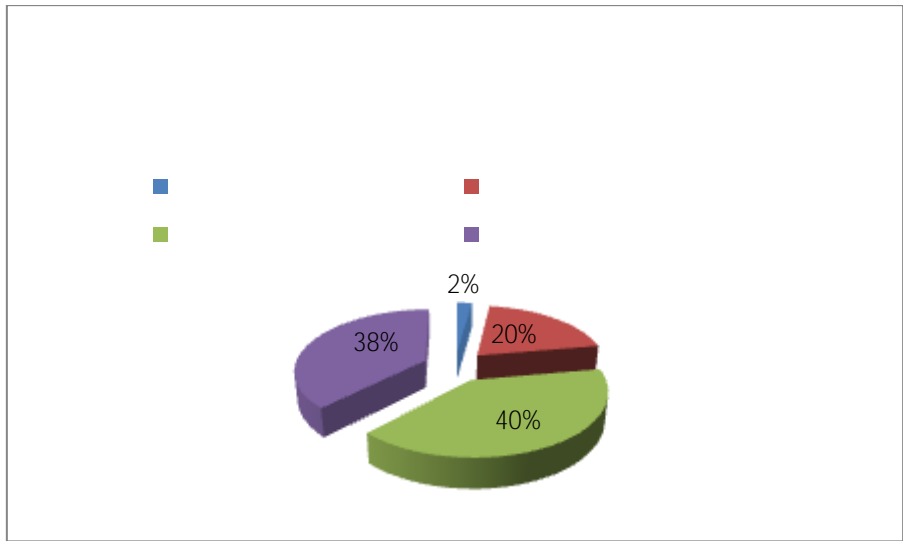
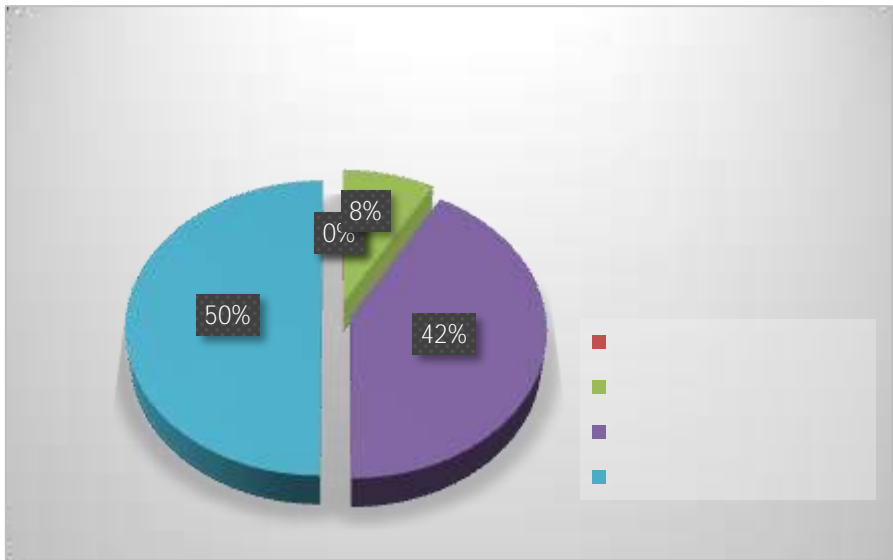
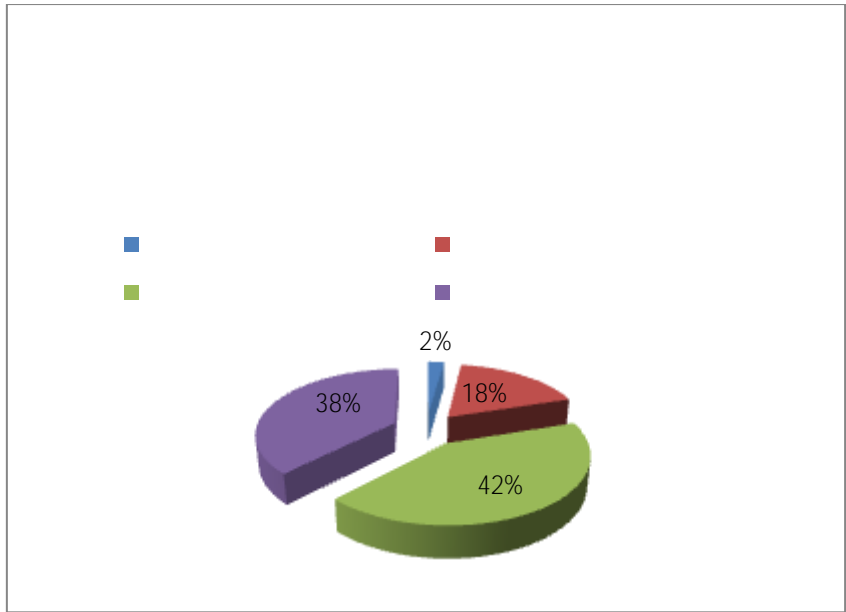
,

:

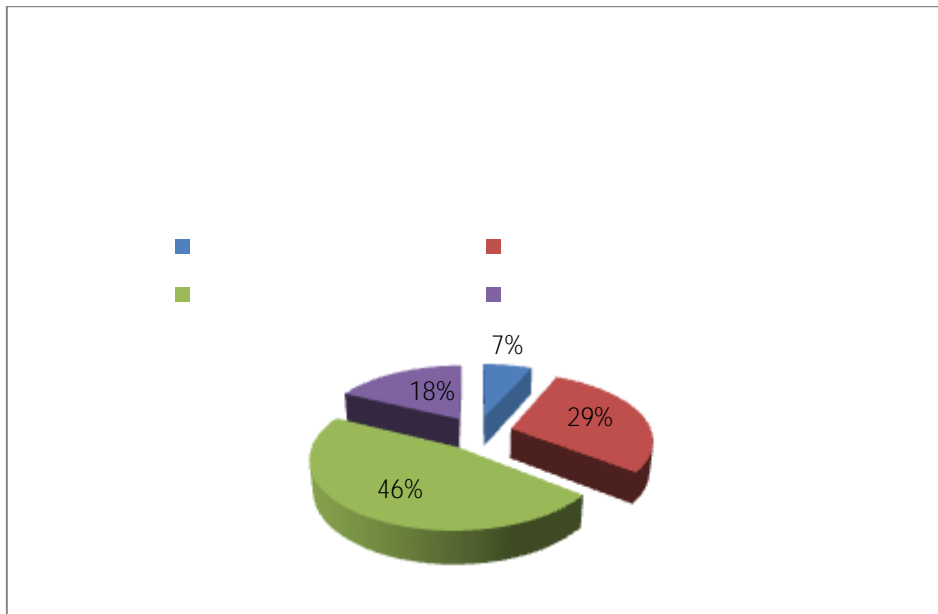
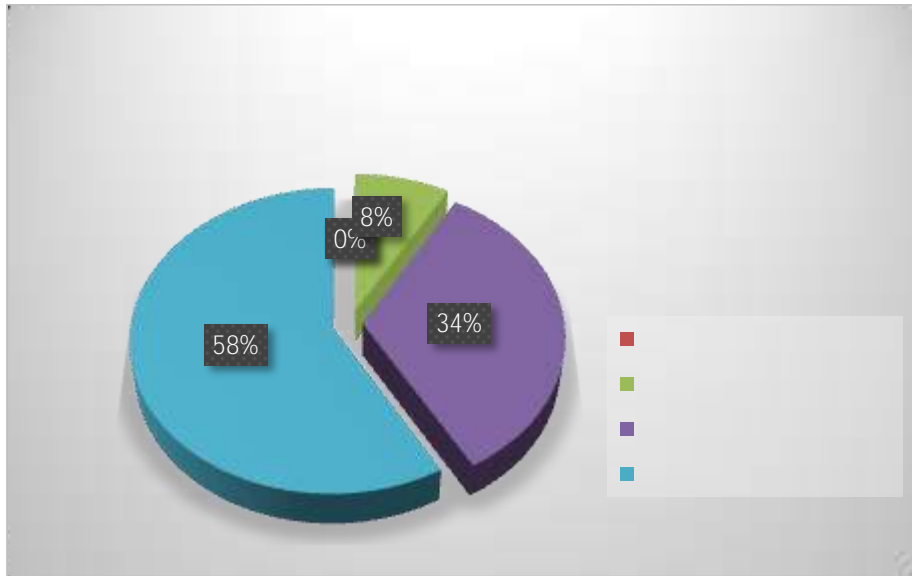








.19: ,,  
“ ( 2.92 3.42).

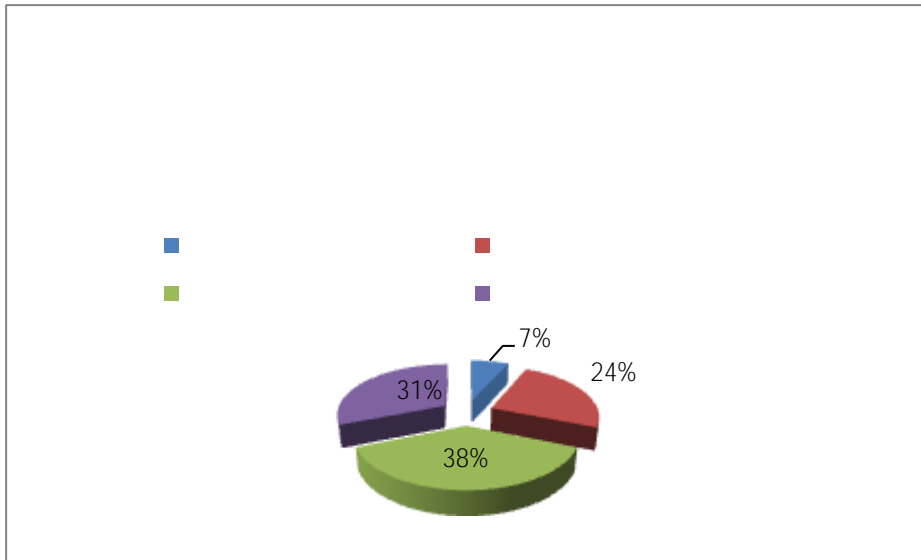
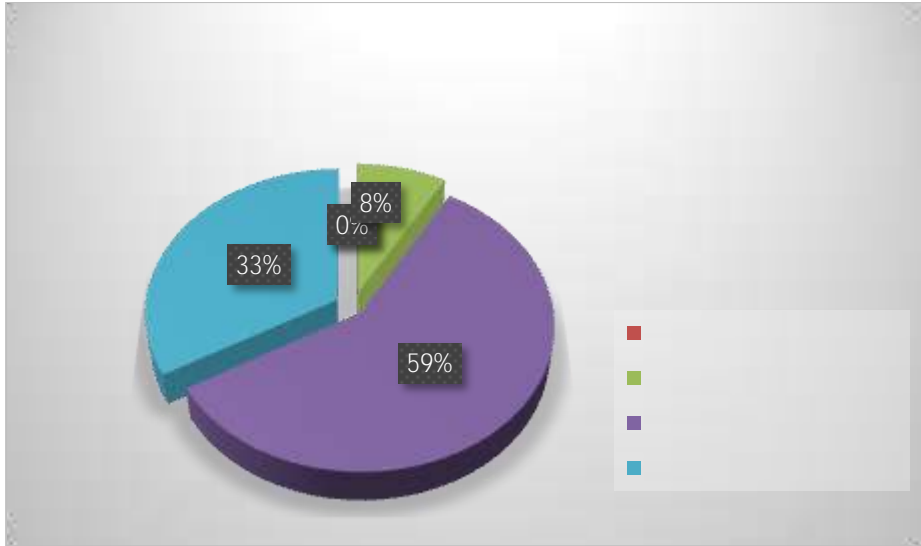


.20: ,,

“

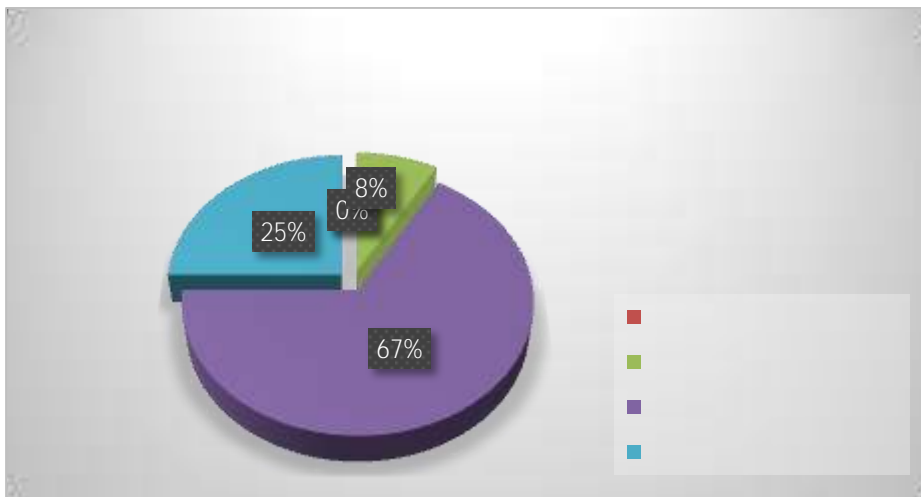
, 28 36

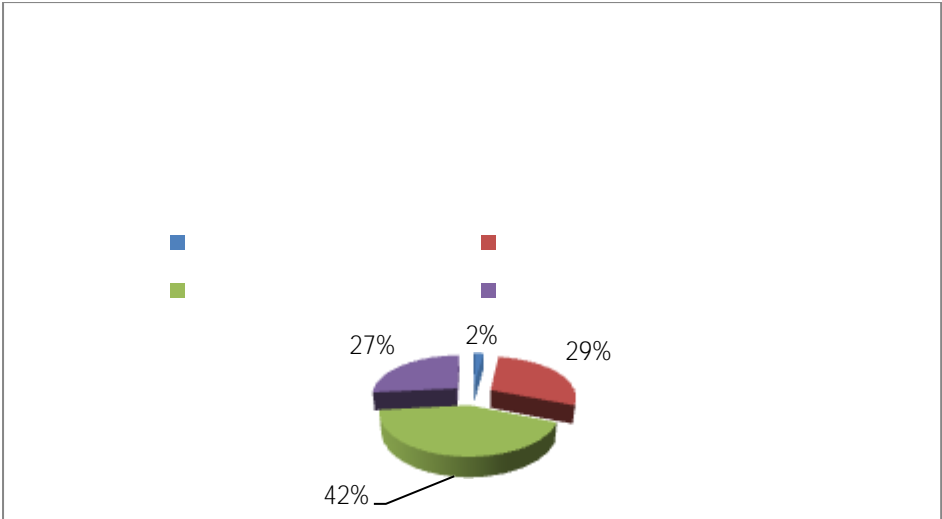
78%,



.21: „

“  
( 3.04 3.08).

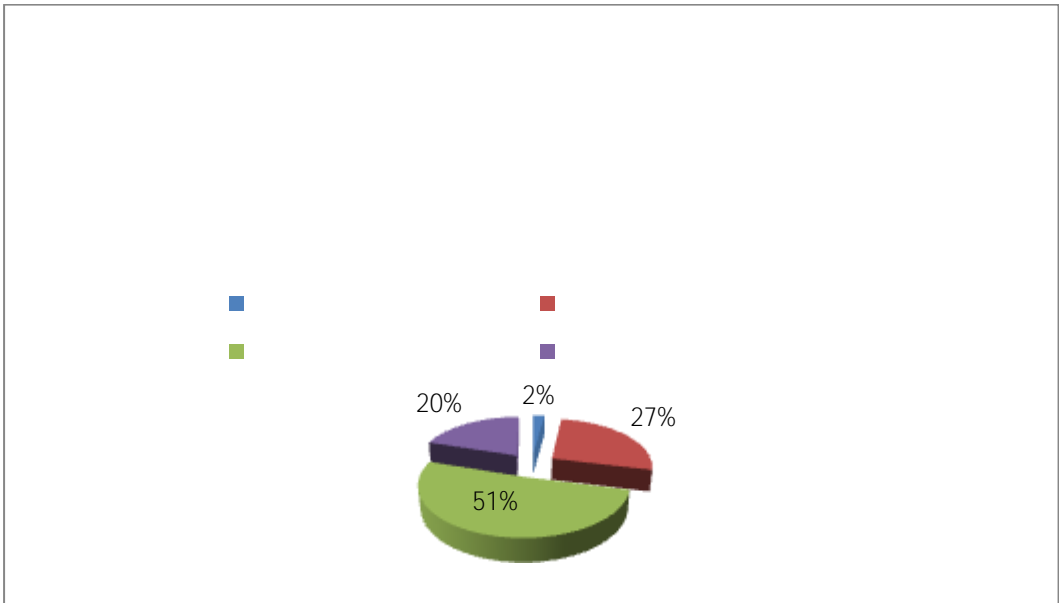
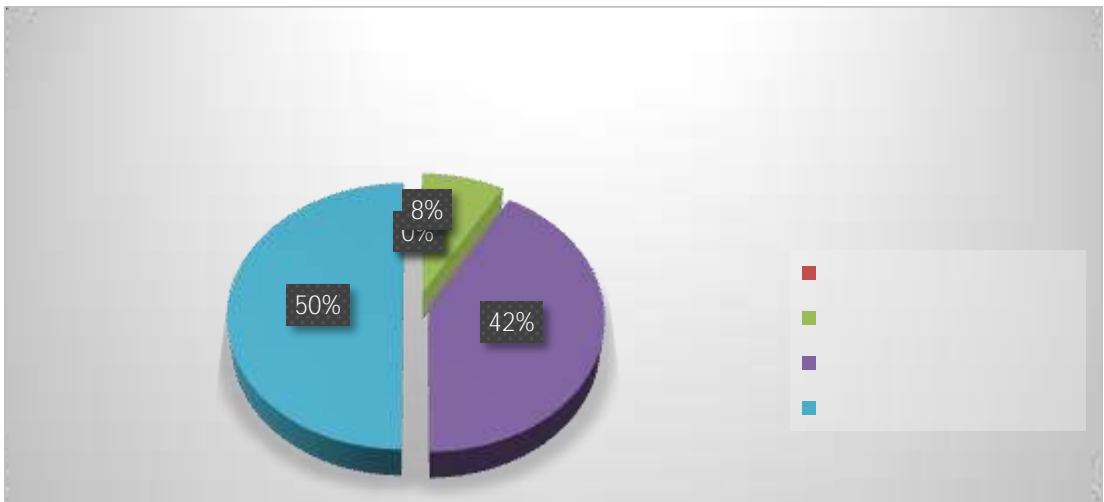




.22: „

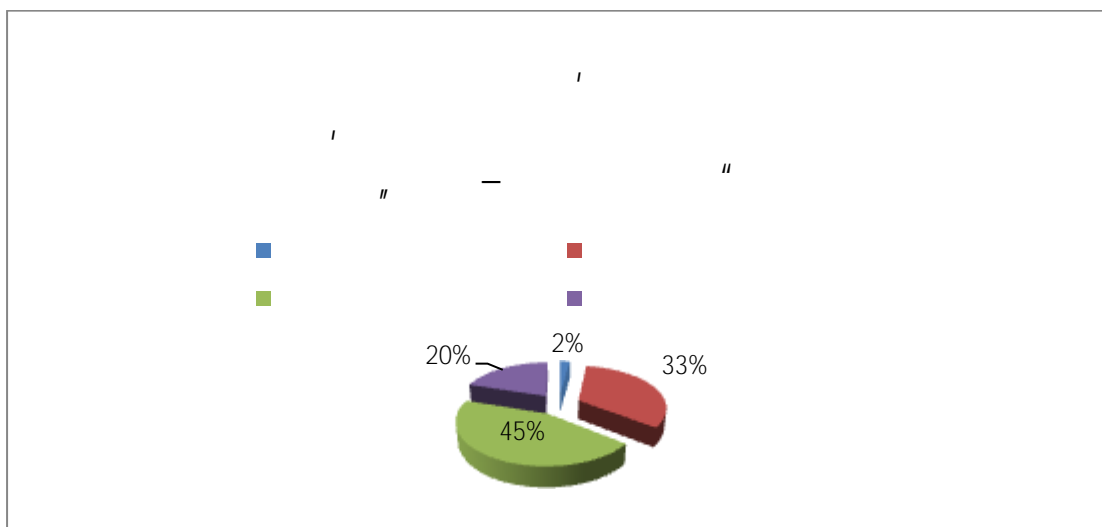
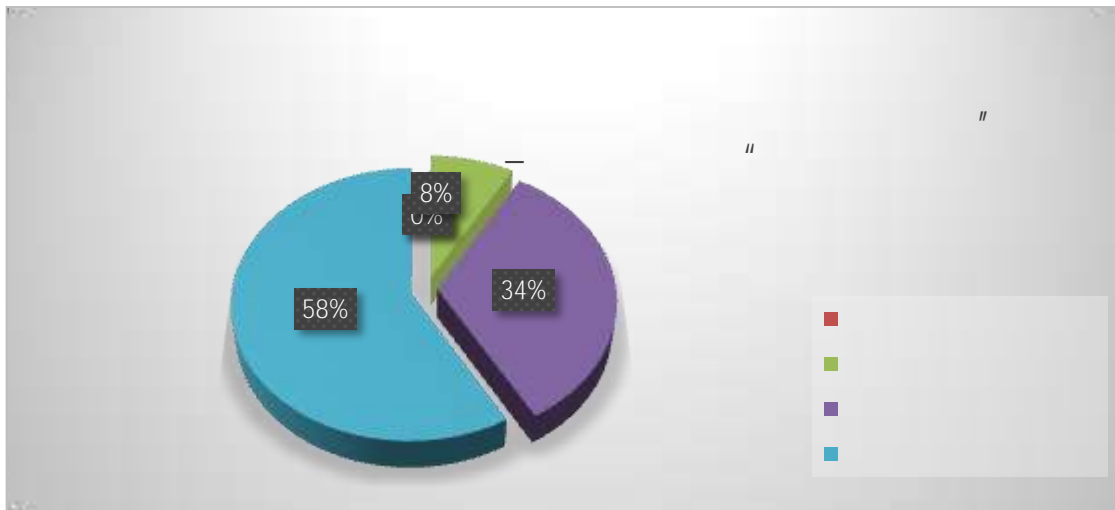
“

:



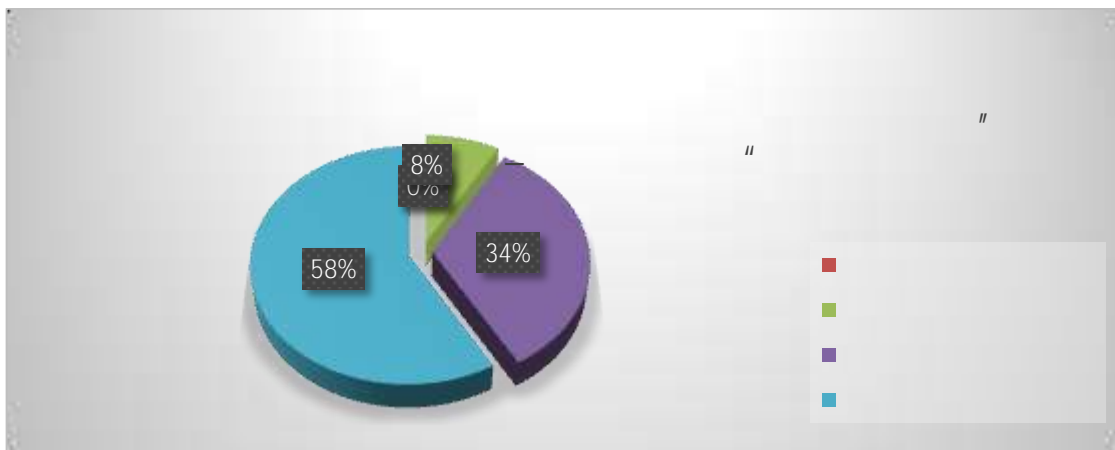
.23:

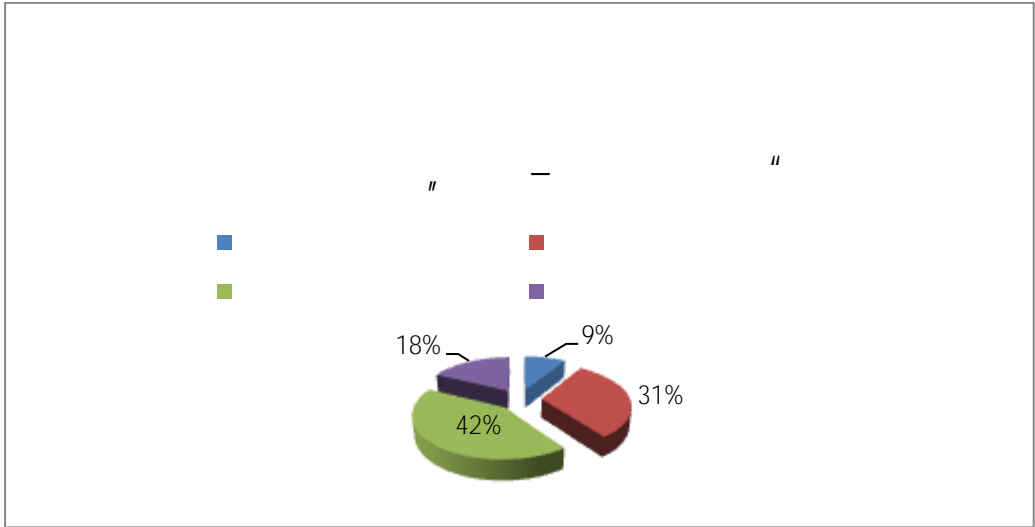
” “ , “ . , ( 2.88), 3.50 .



.24:

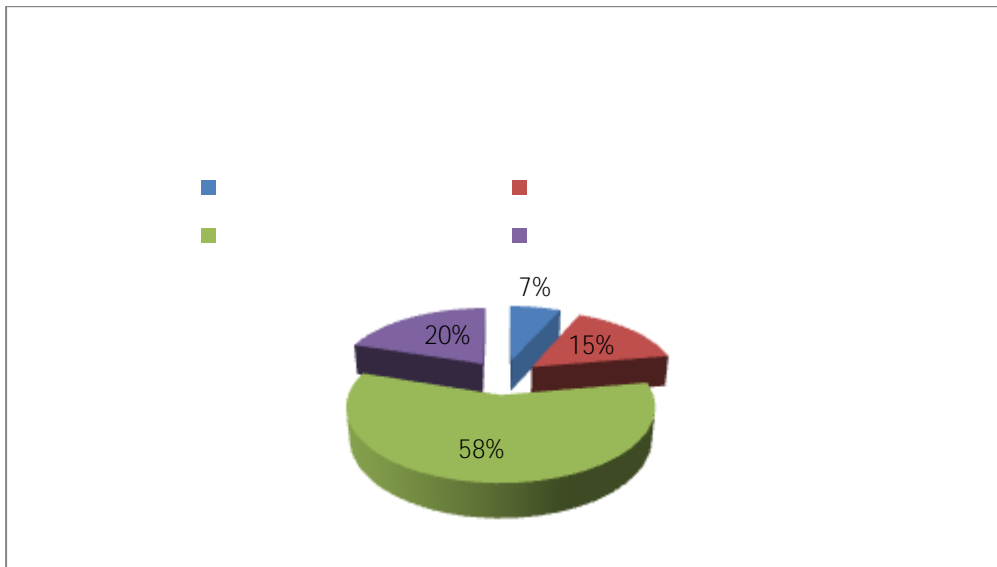
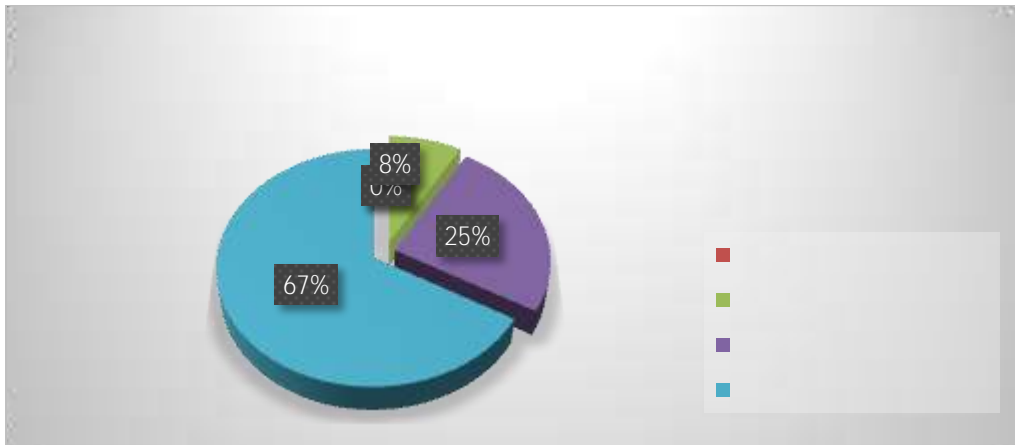
” “ , ( 3.19).





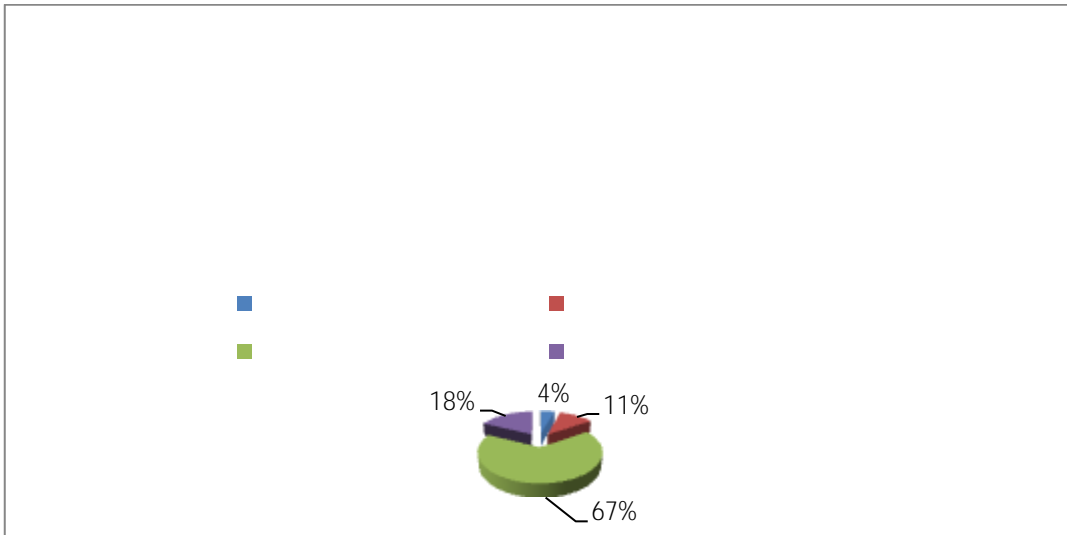
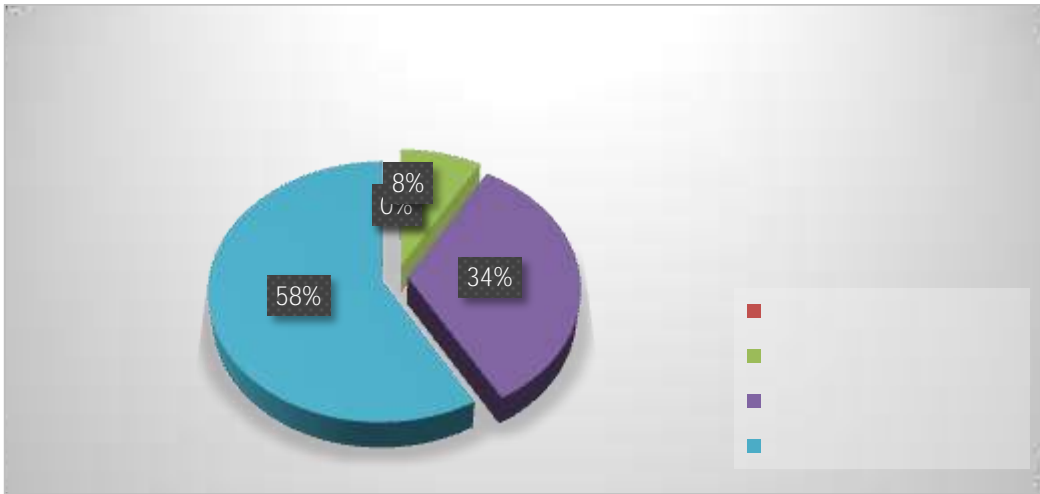
.25,

( 3.11).



.26,

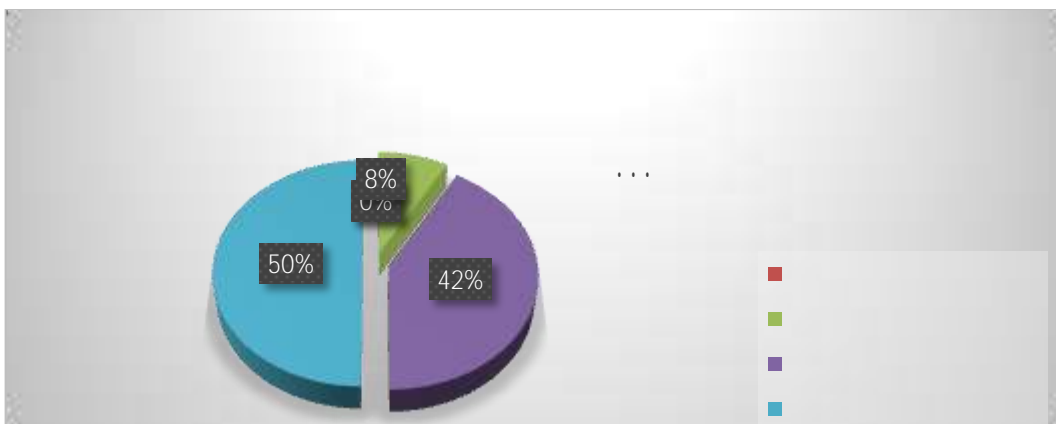
( 3.06 75%).

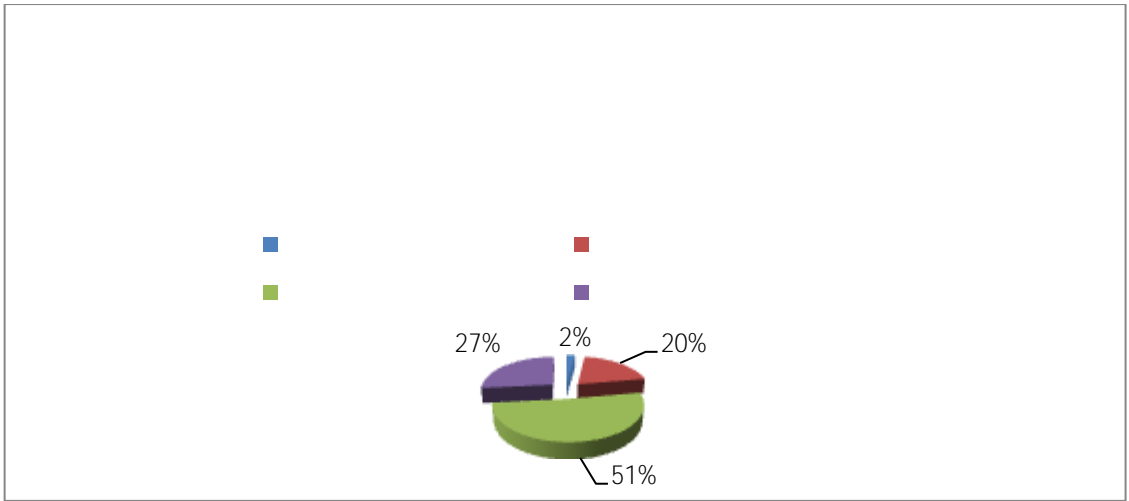


.27:

”

“( 3.14 78%).

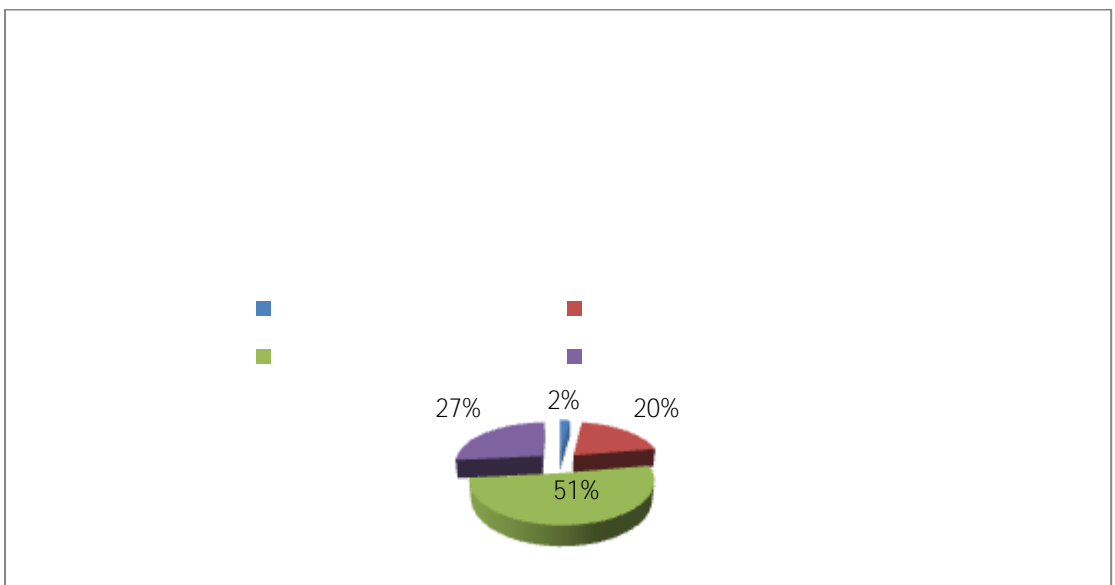
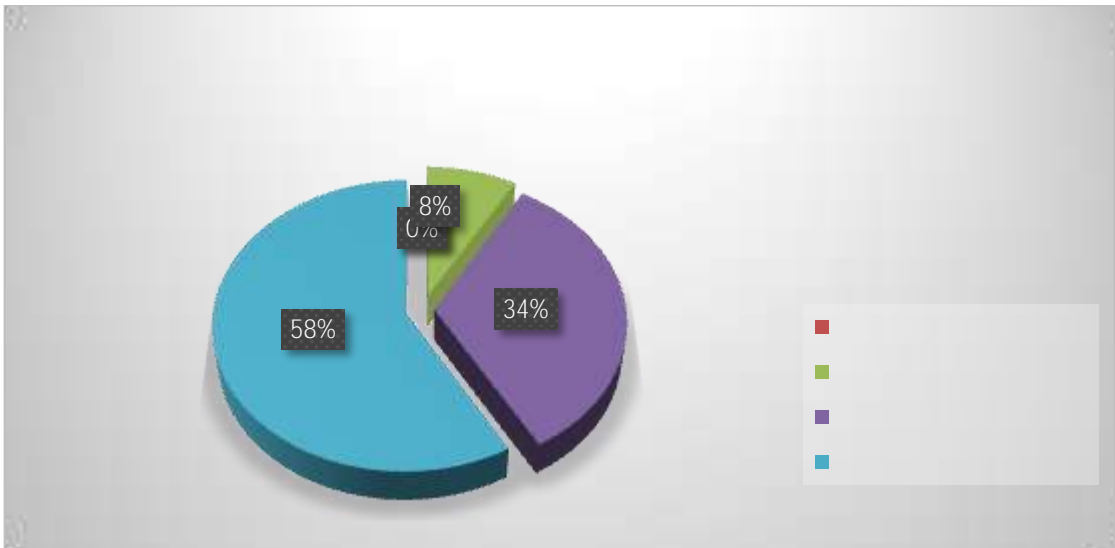




.28: ,,

“

( 3.19).

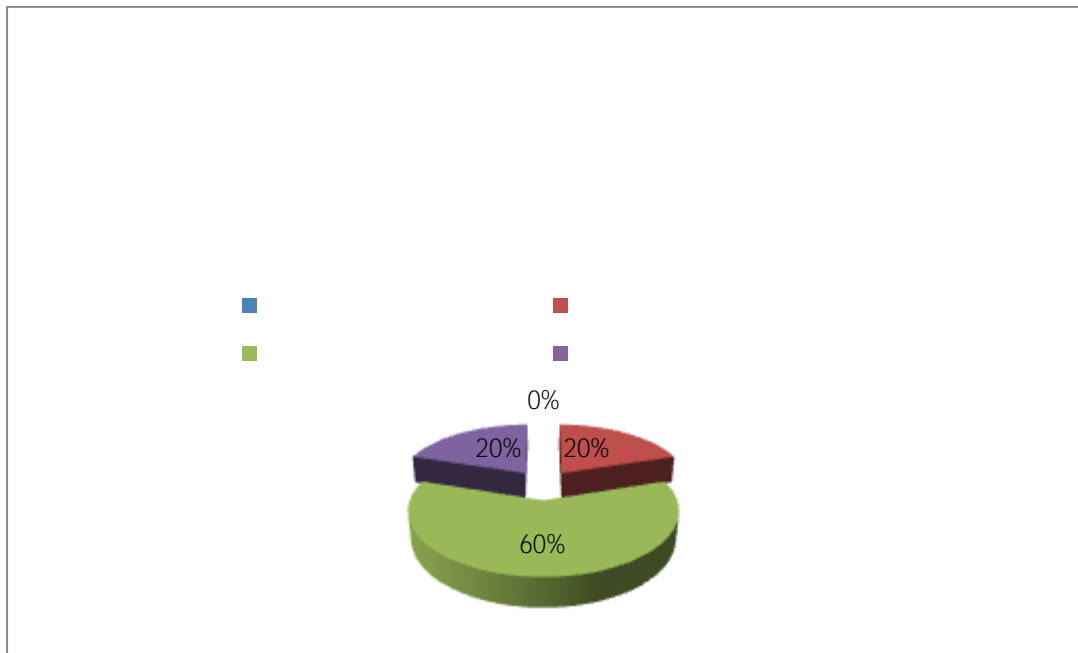
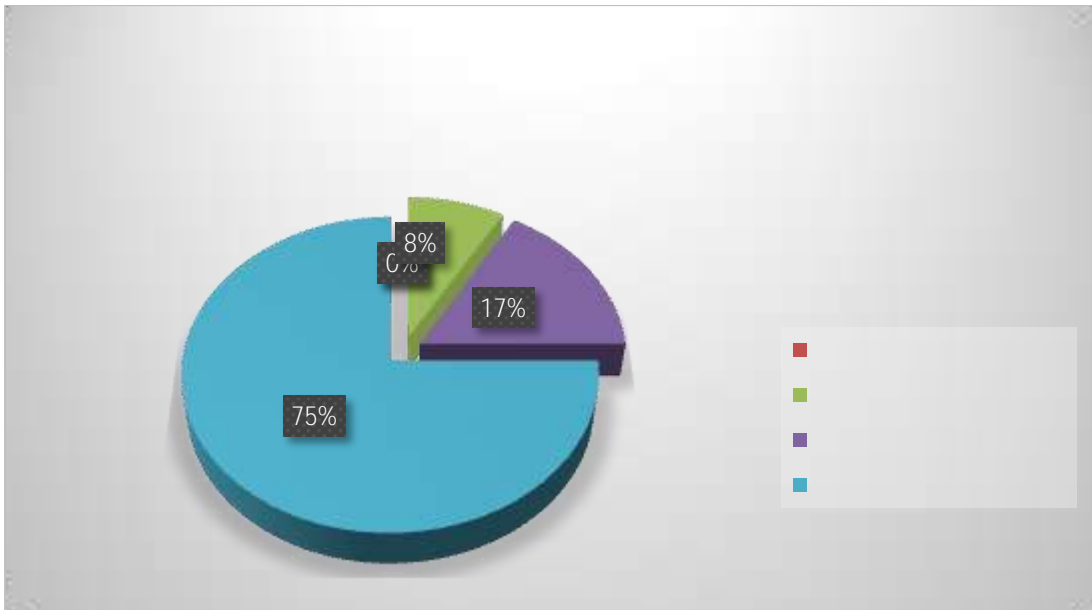




. 29: „

“ 75%

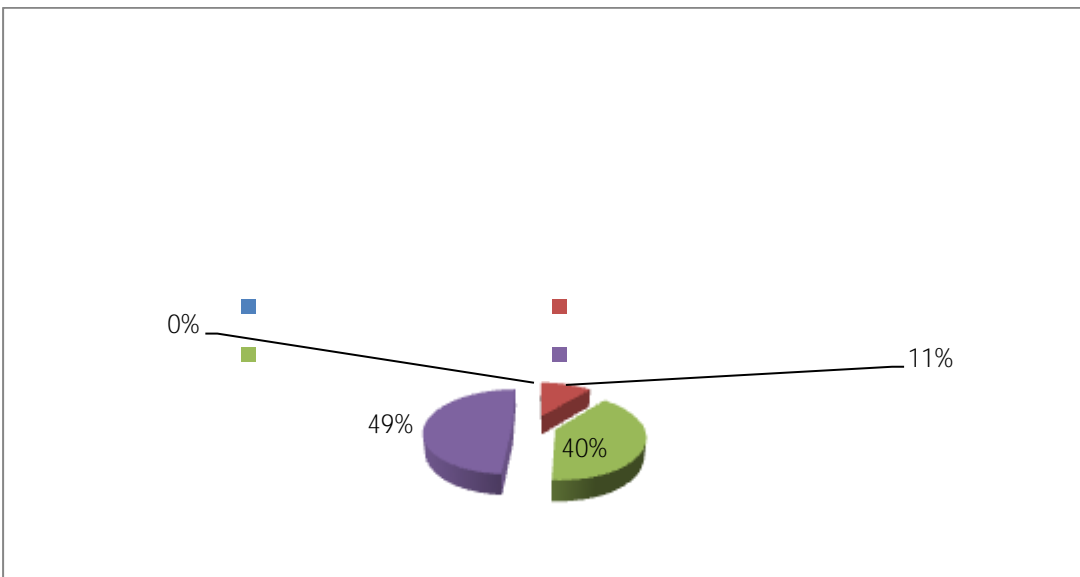
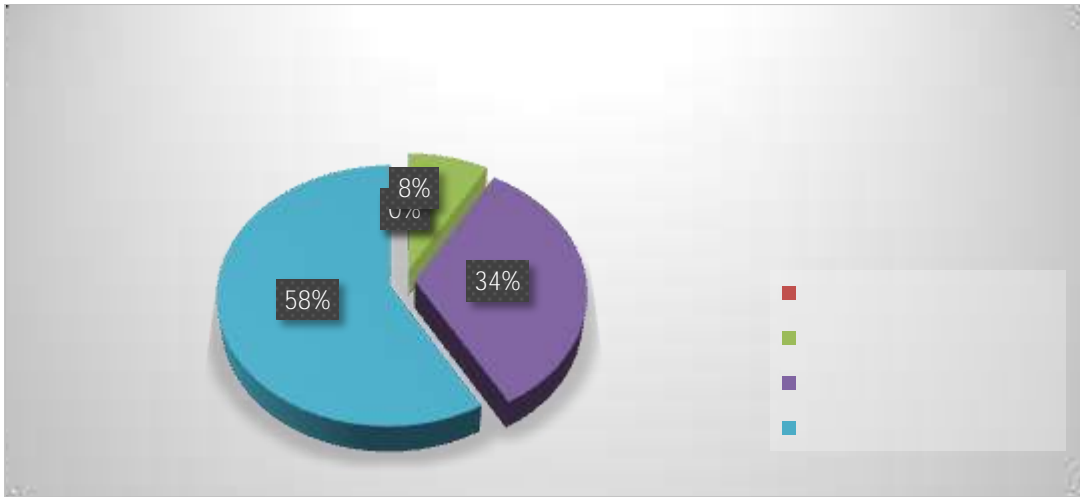
3.08.



86% ( 3.36)

.30

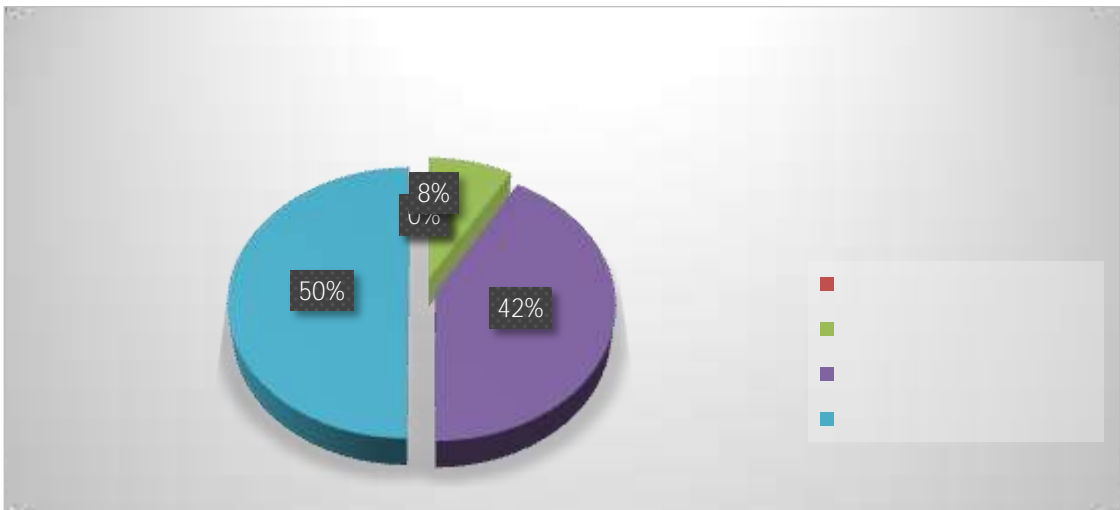
:

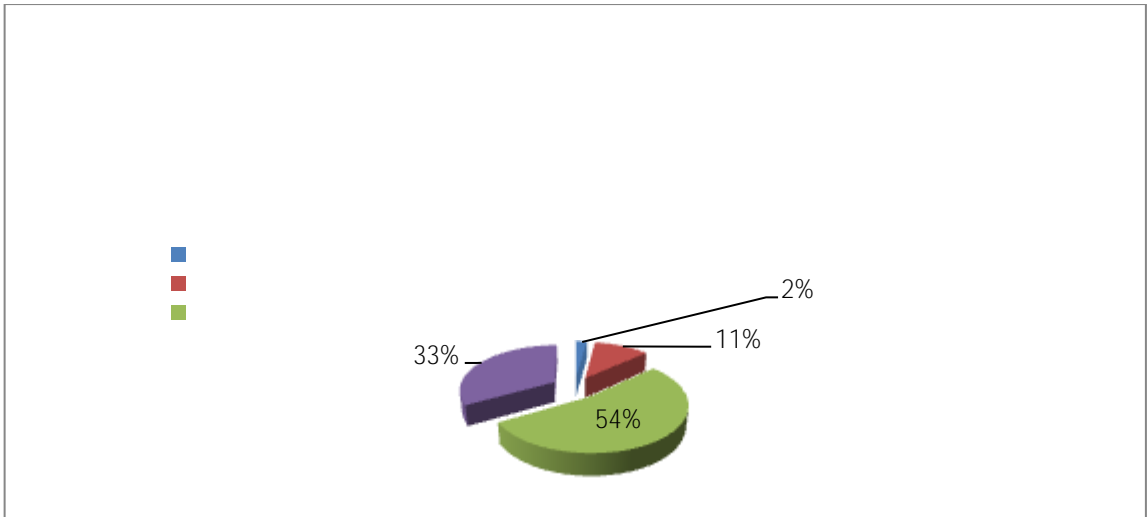


.31: „

“ (94 %

3.44).





**1.2**

135

, 76 59 .  
:

		1	2	3	4	
1			48	81	6	2,69
2			42	81	12	3.09
3		9	33	63	30	2.84
4			36	57	42	3.04
5	, ,		30	69	36	3.04
6	, ,	1	2	3	4	
6.1		6	42	45	42	2.91
6.2		6	42	49	38	2.88
6.3		9	45	41	40	2.83
6.4		6	45	54	30	2.80
7	, ,	1	2	3	4	
7.1		6	30	72	27	2.89
7.2		6	27	66	36	2.98
7.3		9	24	60	42	3.00

7.4		6	27	63	39	3.00
8			42	63	30	2.91
9	,	1	2	3	4	
9.1			18	75	42	3.17
9.2			39	57	39	3.00
9.3			30	72	33	3.02
9.4	(	6	24	69	36	3.00
9.5	)	3	30	78	24	2.91
9.6		3	30	63	39	3.02
10		18	42	51	24	2.60
11		9	33	60	33	2.87
12			27	69	39	3.09
13			30	63	42	3.09
14		15	48	60	12	2.51
15		6	33	72	24	2.84
16		3	42	78	12	2.73
17			36	69	30	2.96
18	:	3	33	51	48	3.07
	-	3	24	54	54	3.18
	-	3	24	57	51	3.16
	-	3	27	54	51	3.13
19		9	39	63	24	2.76
20		9	33	51	42	2.93
21		3	39	57	36	2.98
22		3	36	69	27	2.93

23	’ ‘ ‘ ‘	3	45	60	27	2.82
24	” – “	12	42	57	24	2.69
25	” – “	9	21	78	27	2.91
26		6	15	90	24	2.98
27		3	27	69	36	3.02
28		3	27	69	36	3.02
29			27	81	27	3.00
30			15	54	66	3.78
31		3	15	72	45	3.18

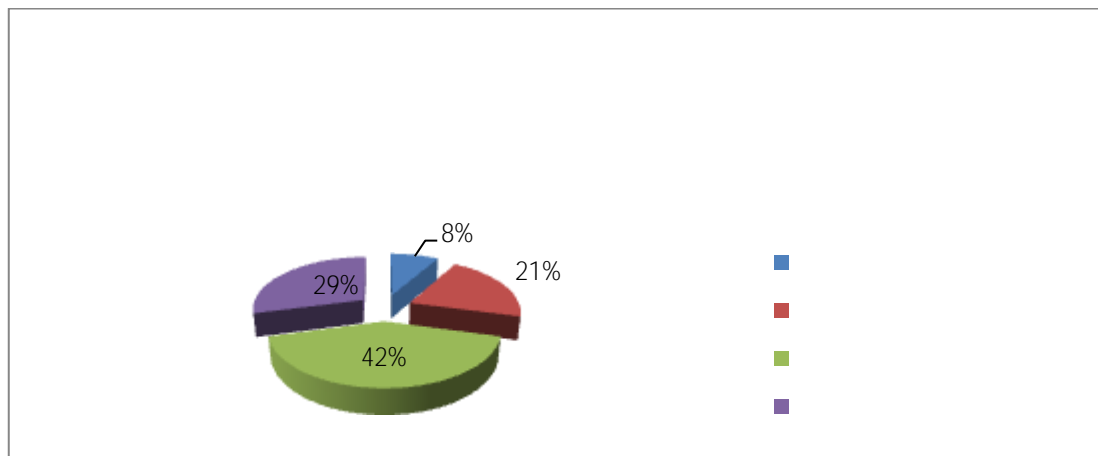
.1: „

“

, 87 135

64%

2.69



.2: „

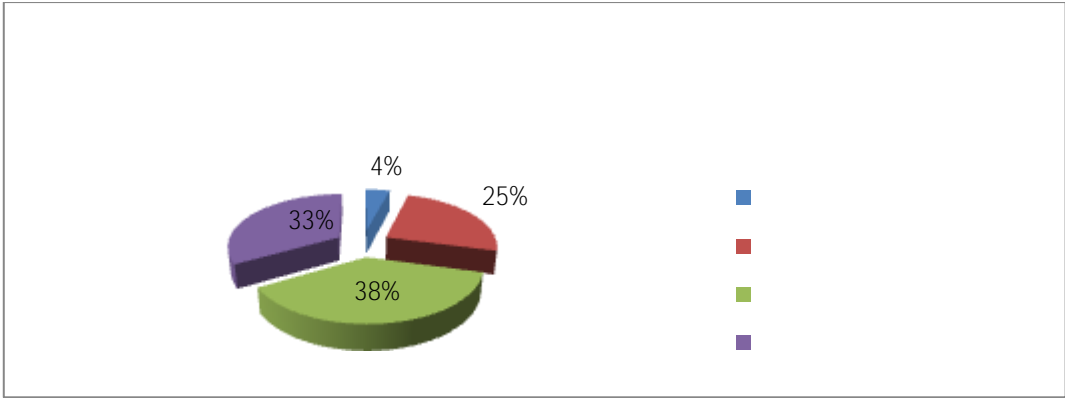
“

93

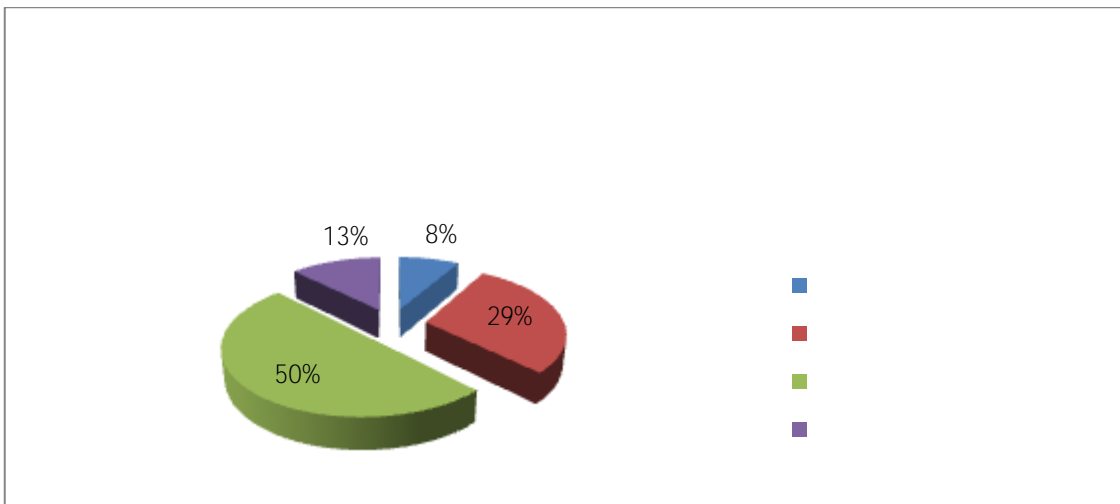
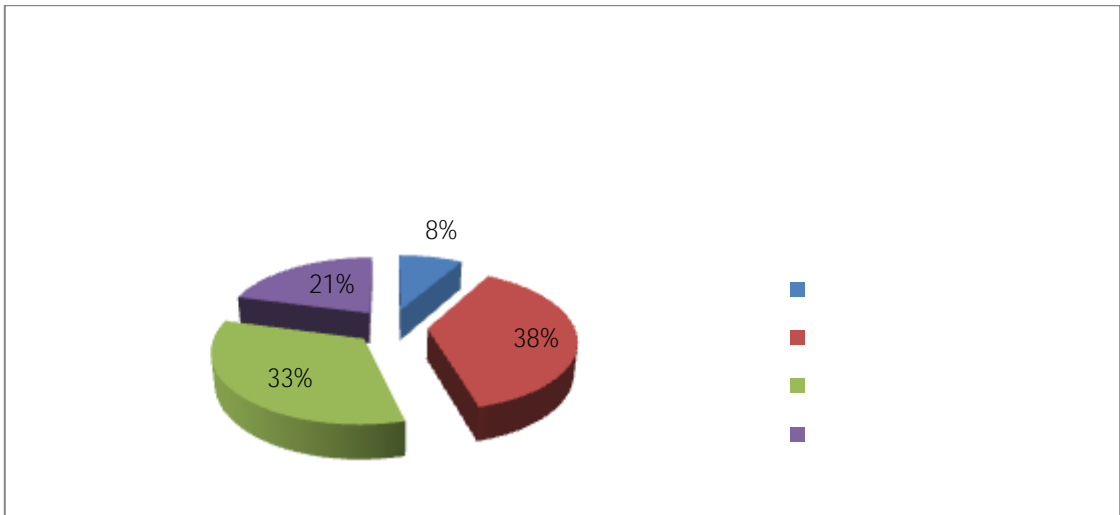
135

69%

( 3.22),



,  
 ( 93 ( 69% - 2.84),  
 ( 99 73%  
 - 3.04).



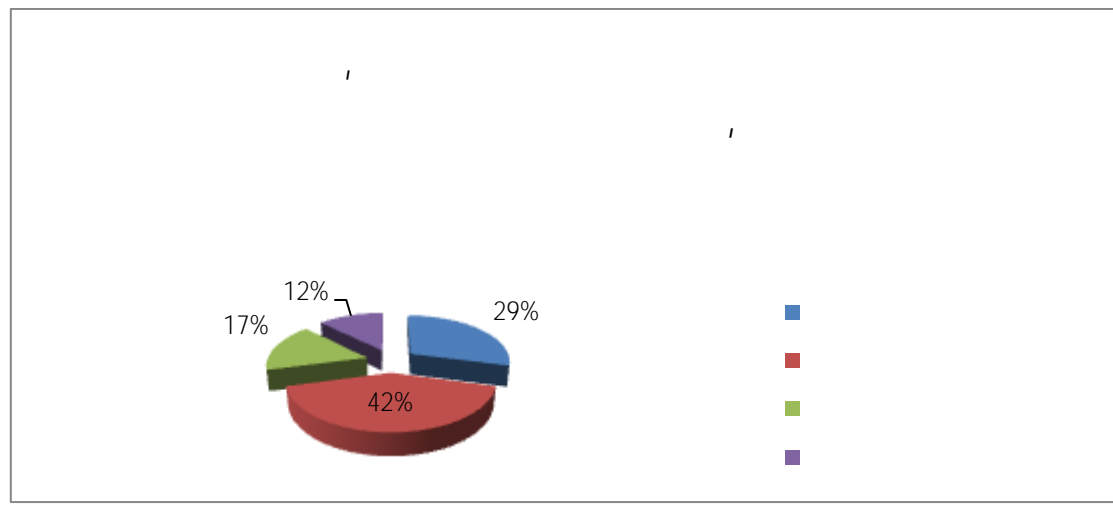
.5: ,, ,

“

105 78 %

(

3.04).



.6: ,, ,

“

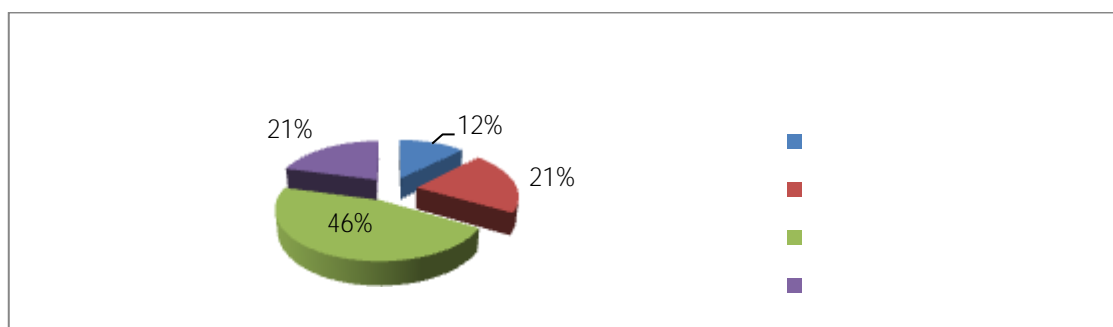
:

”

“ 87

64 %

( 2.91)

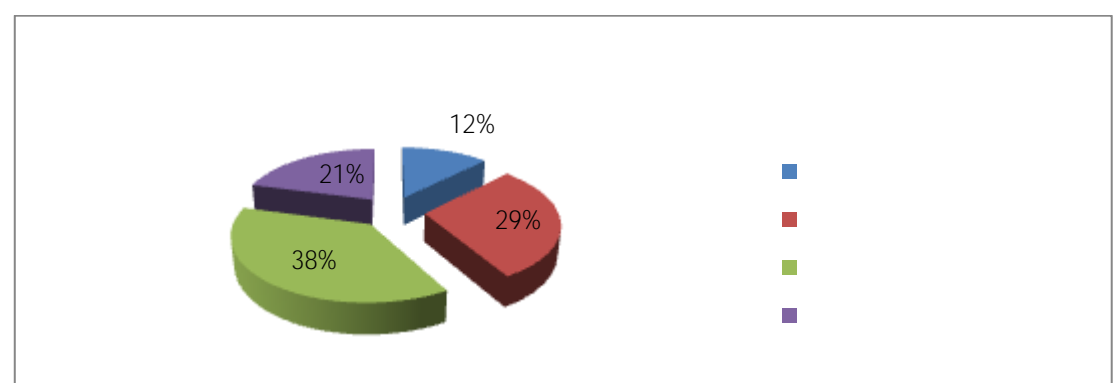


”

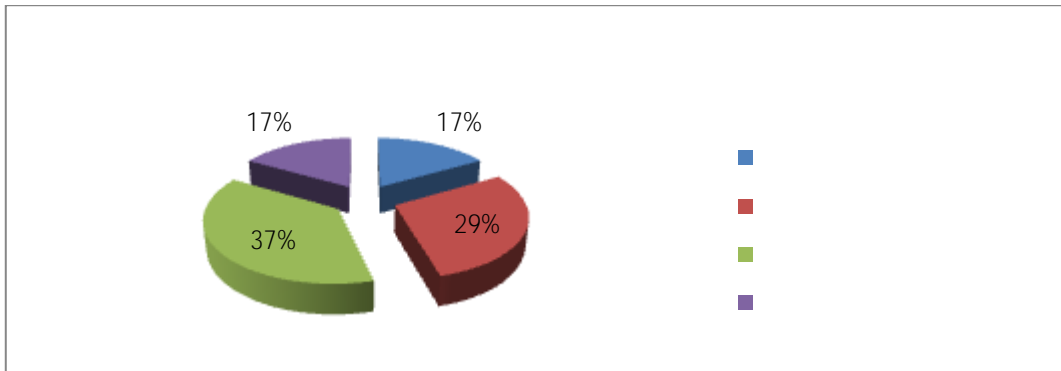
“ 87

64 %

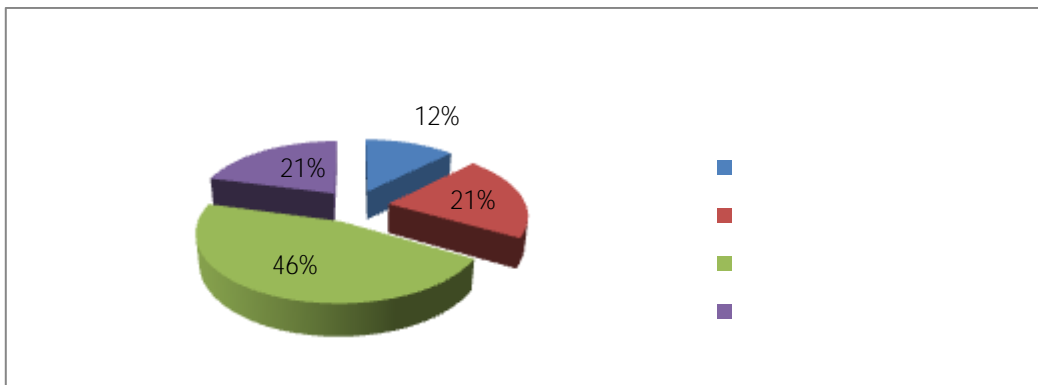
( 2.88)



” “ 81 60 %  
( 2.83)

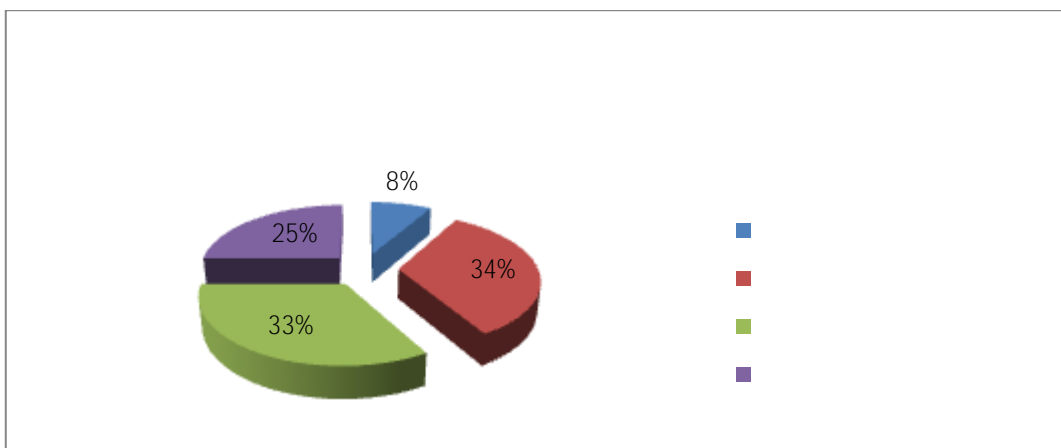


” “ 84 62 %  
( 2.80)



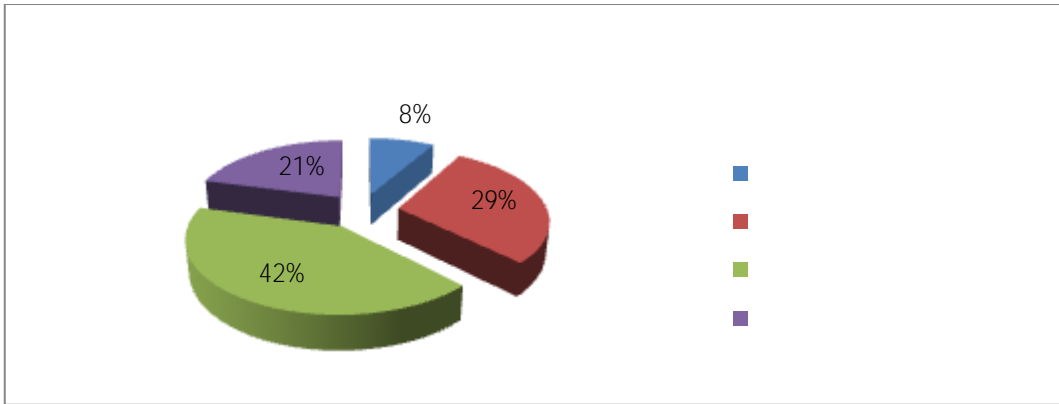
.7: ,, ,  
, “,  
:

,99 73 % ( 2.89).

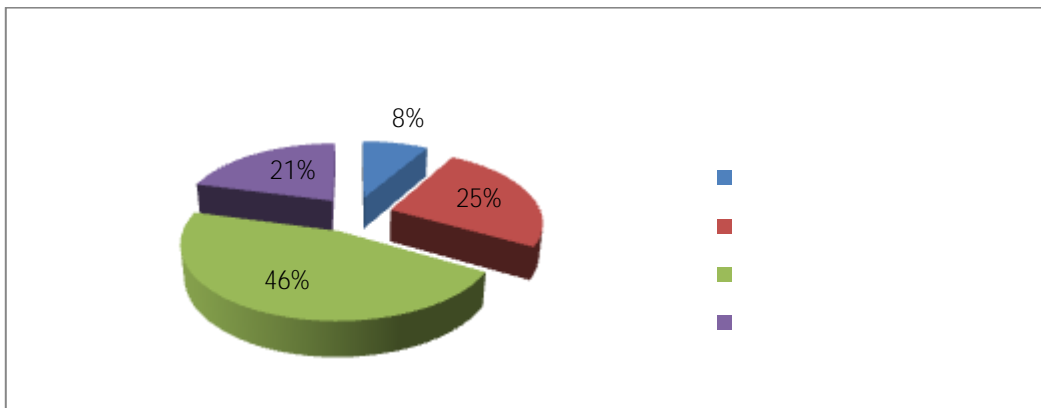




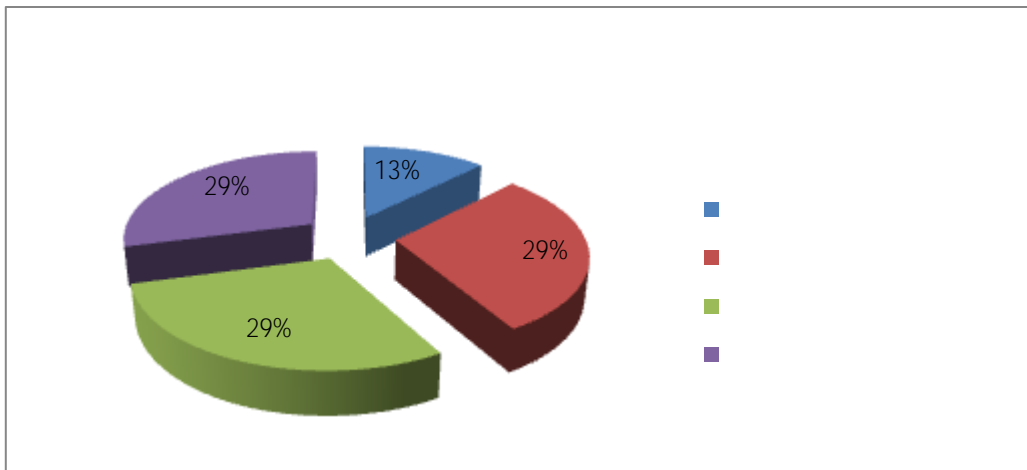
( 2.98). , 102 76 %



76 % ( 3.00). 102



( 3.00). , 102 76 %

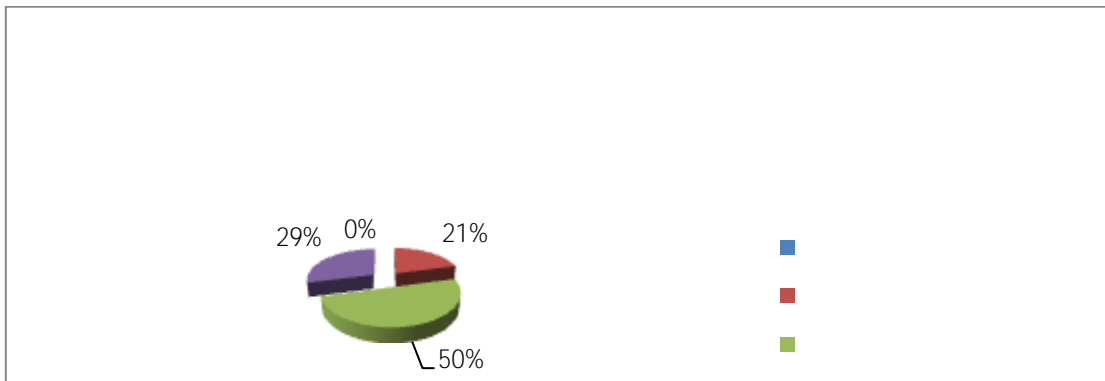


.8:,,

“ 93

69 %

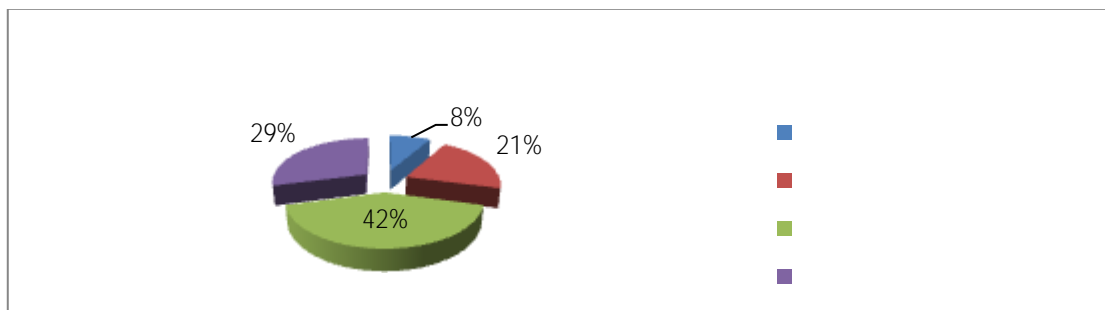
( 2.91).



.9: ,,

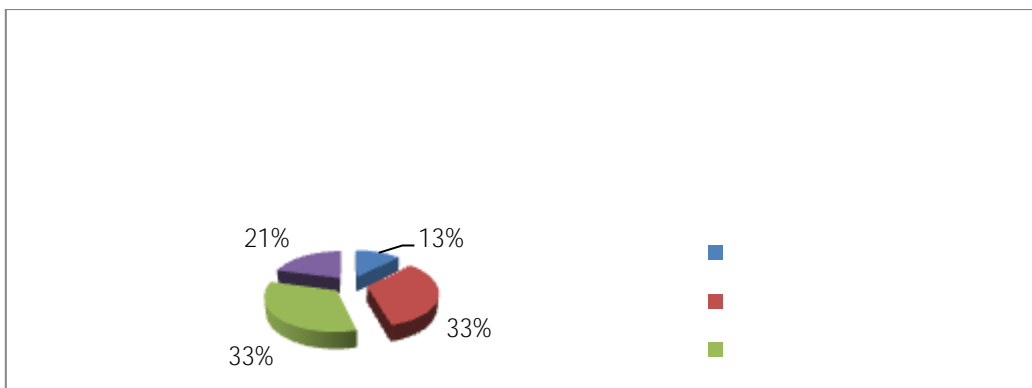
, , , , ,

, 117 87 % ( 3.17).

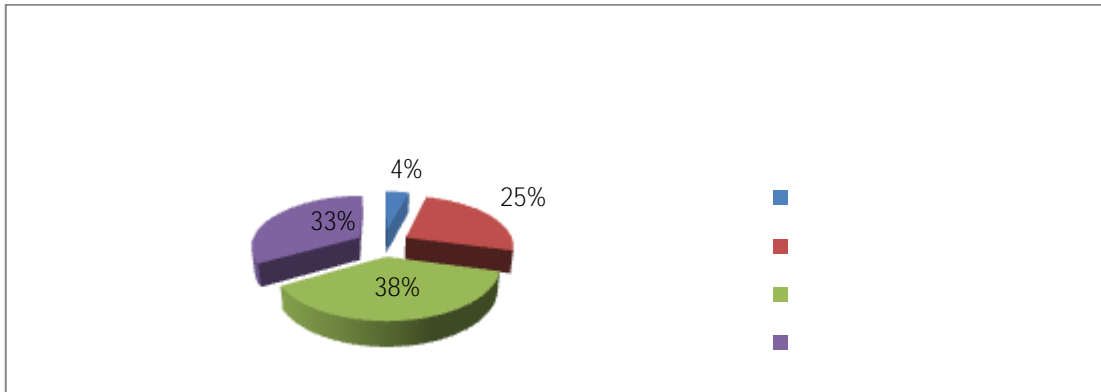


, 96

71 % - 3.67.

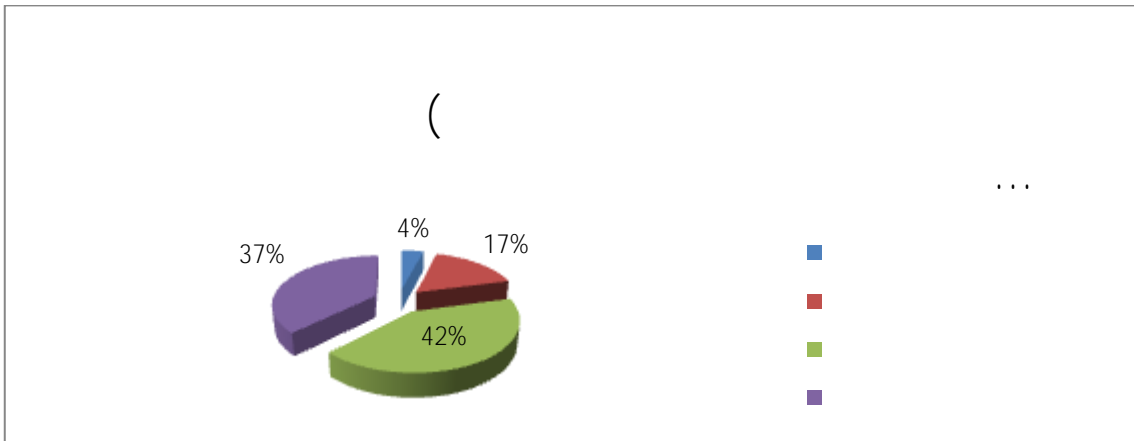


( 3.02).

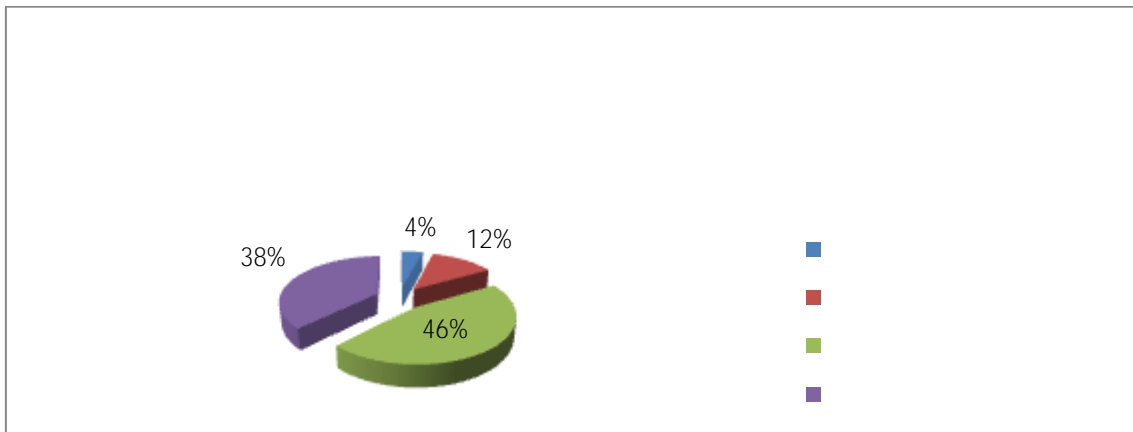


(

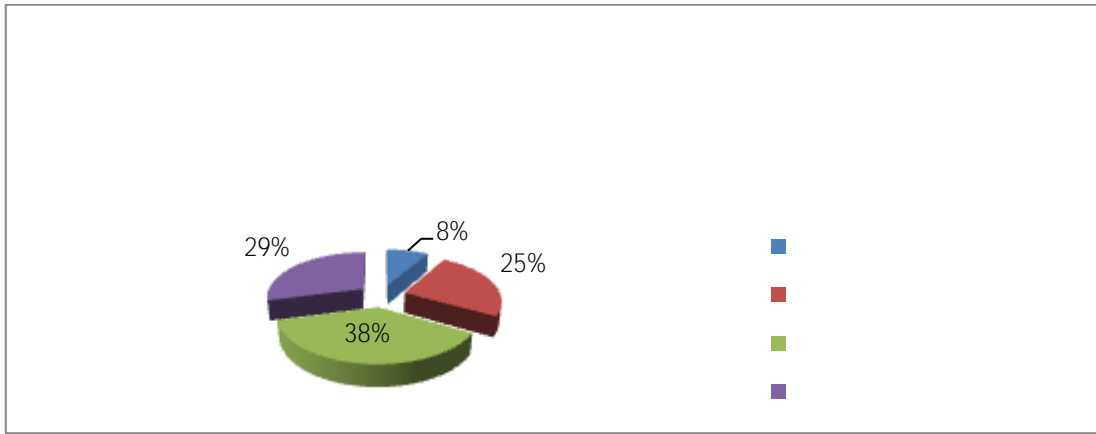
) 105 78 % ( 3.00).



(102 76 % - 2.91).



(102 76 % - 3.02).

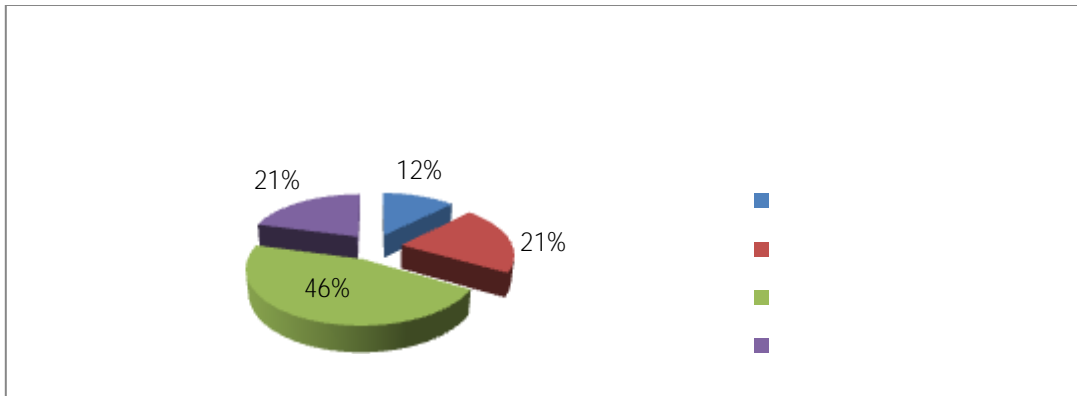


.10: „

“

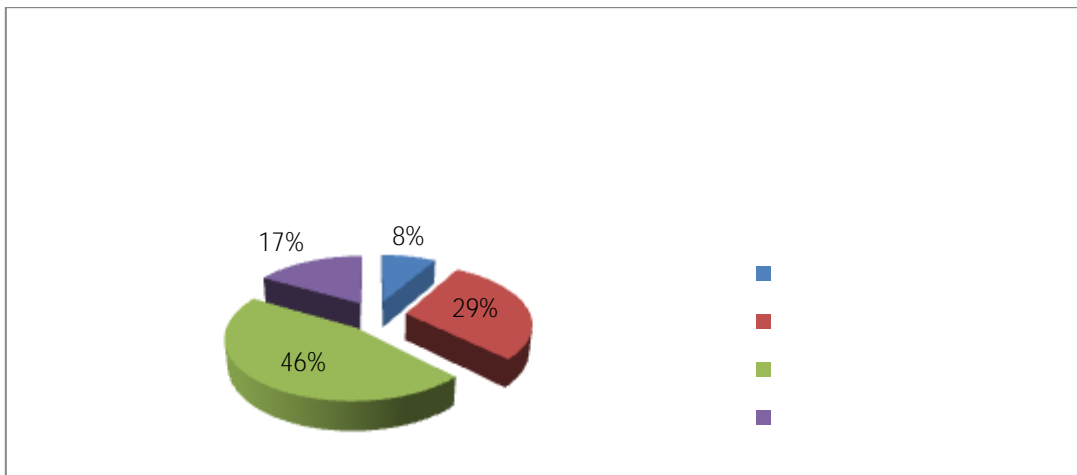
(75 56 % - 2.60),

:



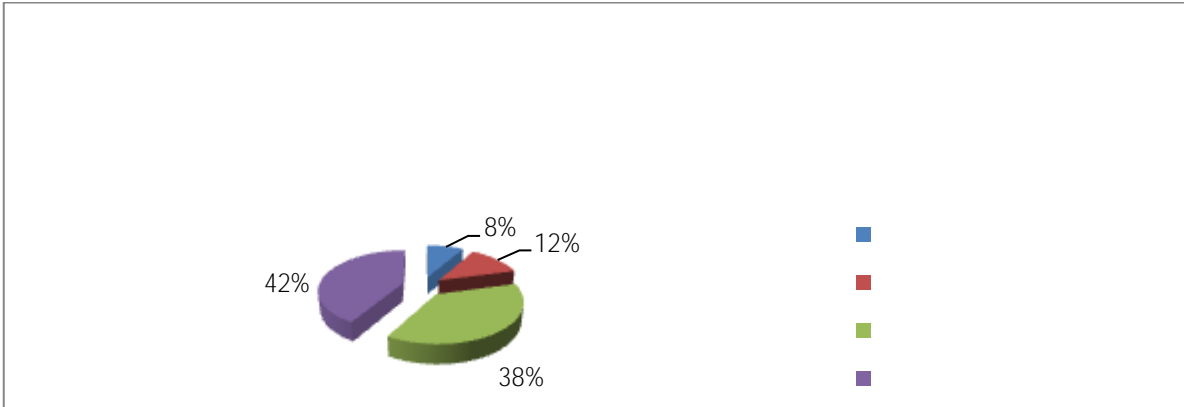
.11,

( 2.87).



.12: „

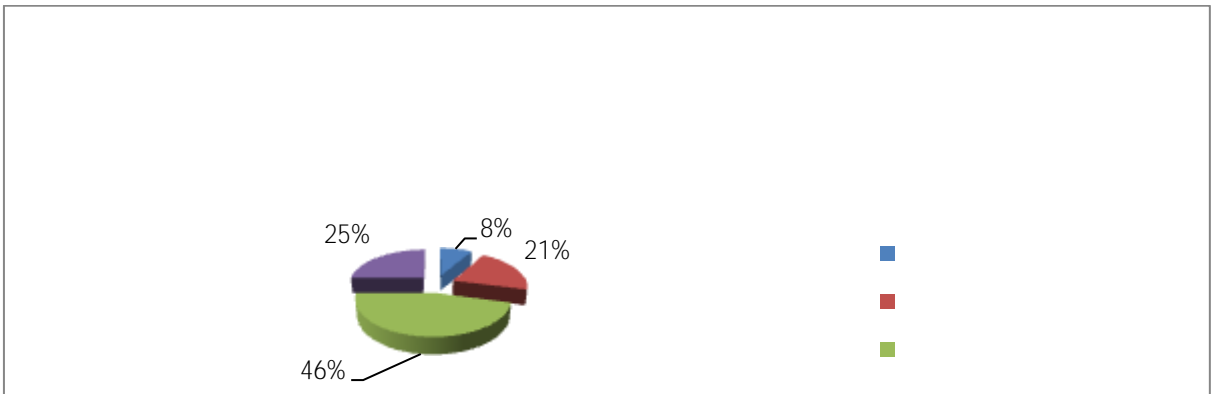
“80% ( 3.09).



.13: „

“

( 3.09).



.14: „

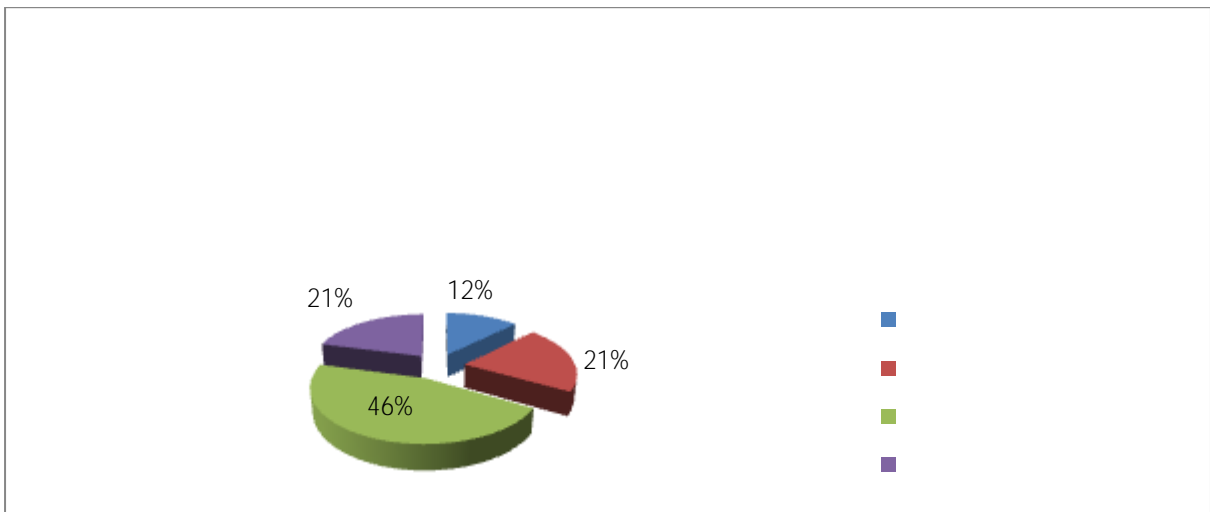
“,

,

72

53 %

( 2.51).

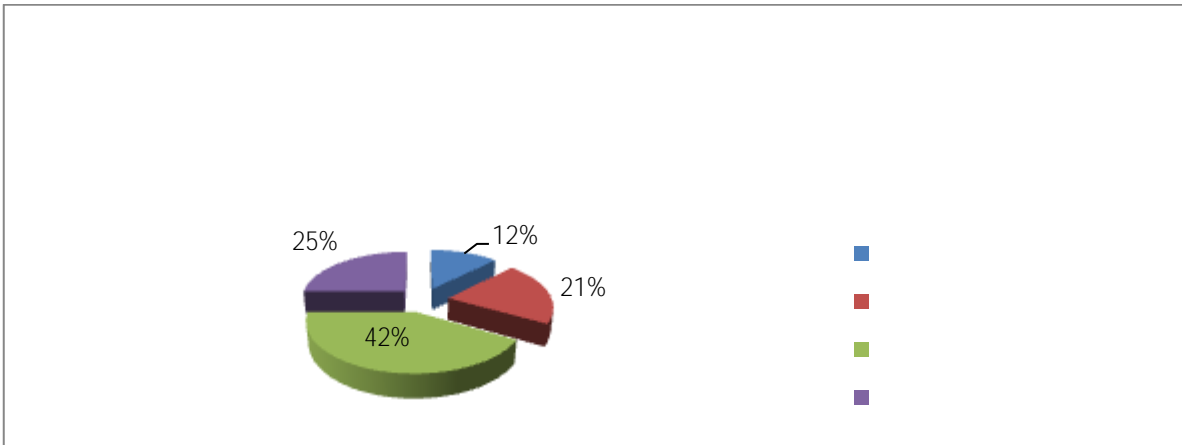


29 %

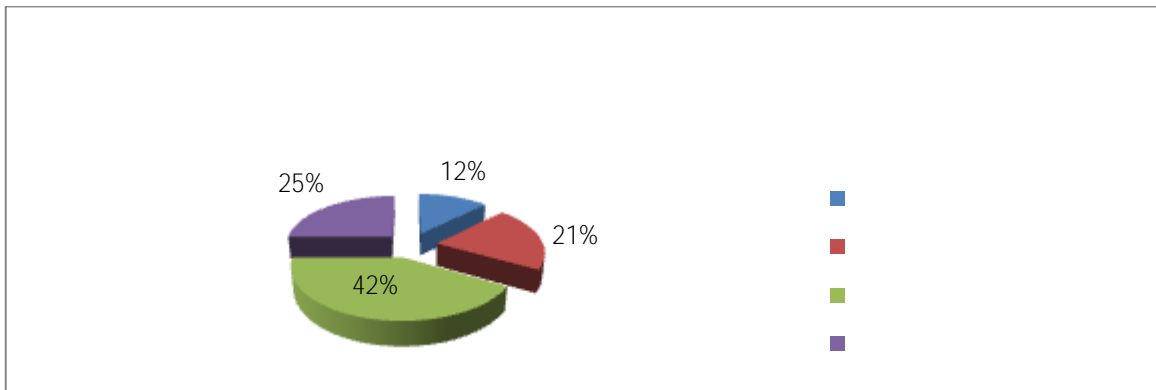
”

“

( 2.84).



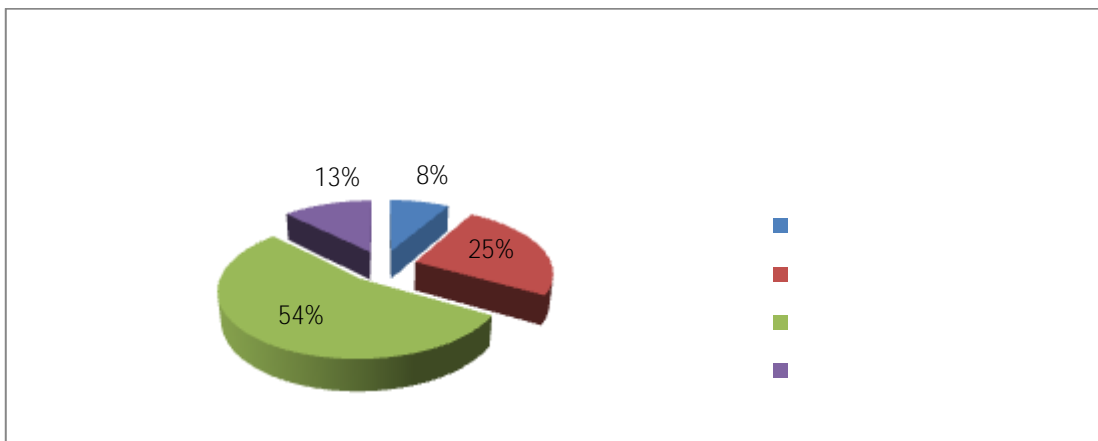
( 2.84).



.17: „

“ 99 73 %

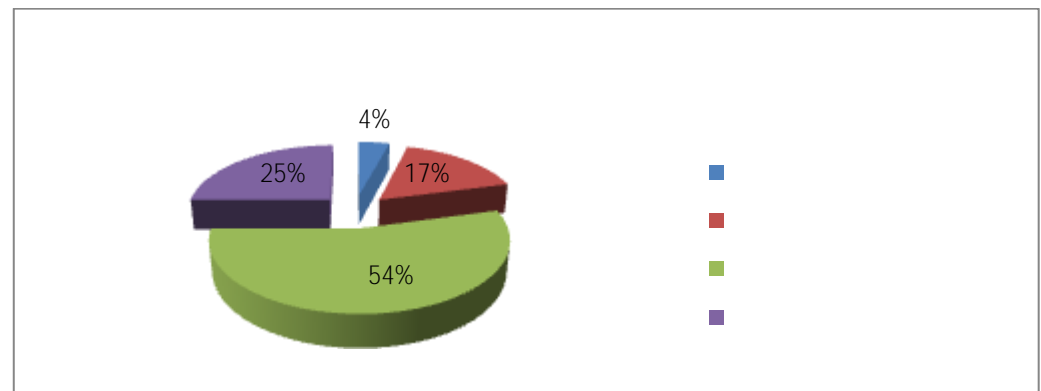
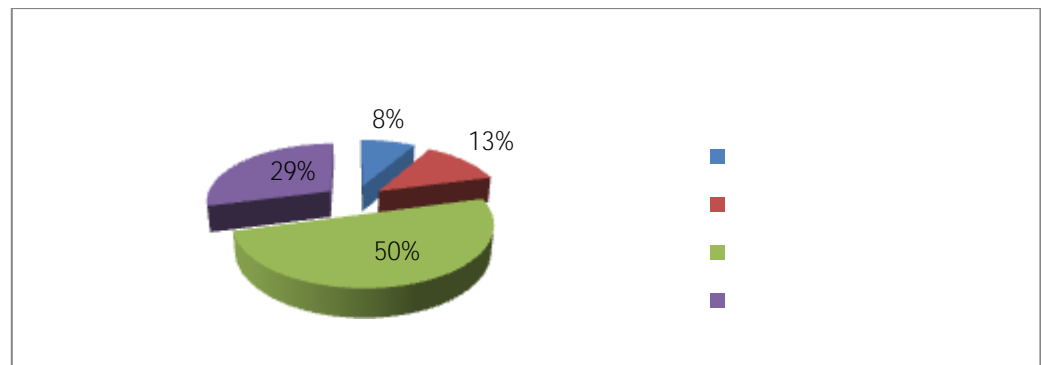
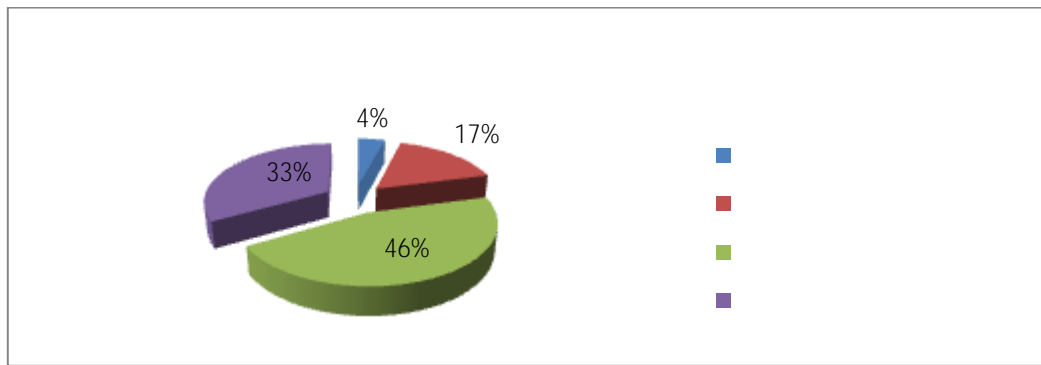
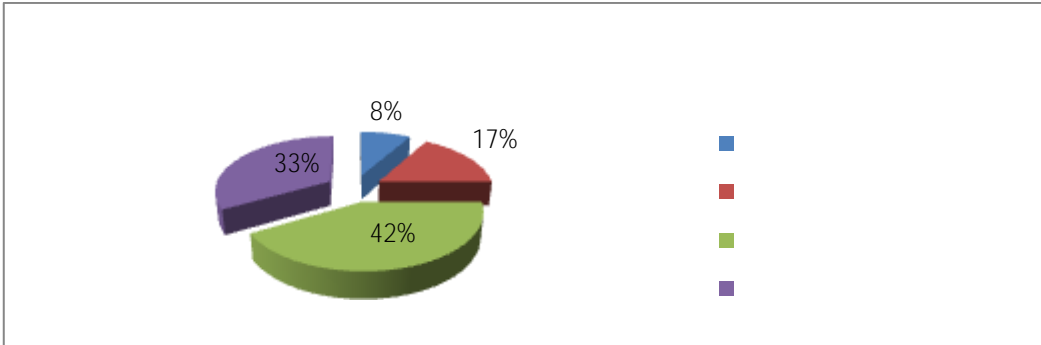
( 2.96).



.18: „

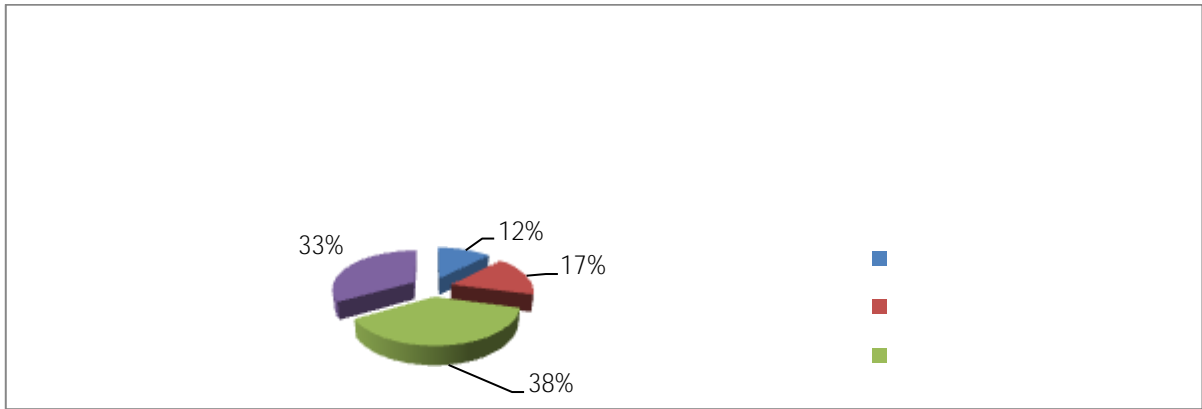
:  
“  
—

, :



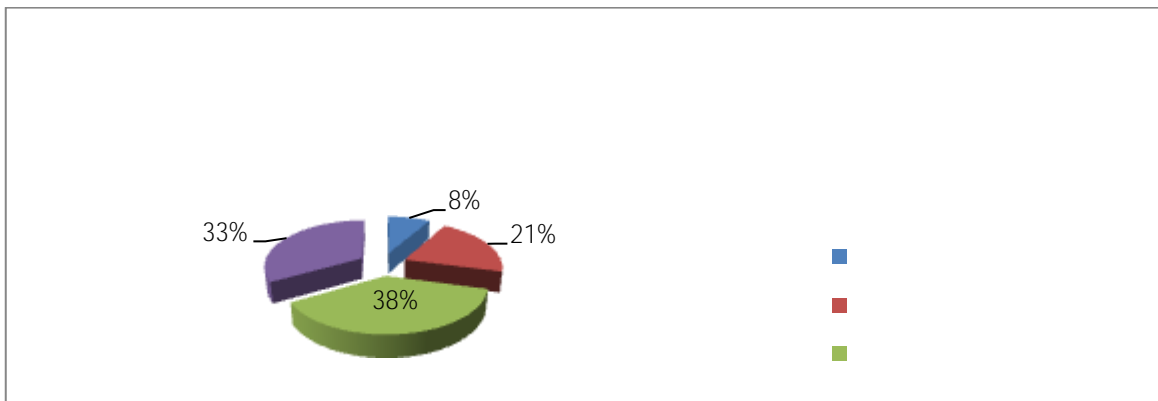
.19: „  
“ 48 36 %

( 2.76).

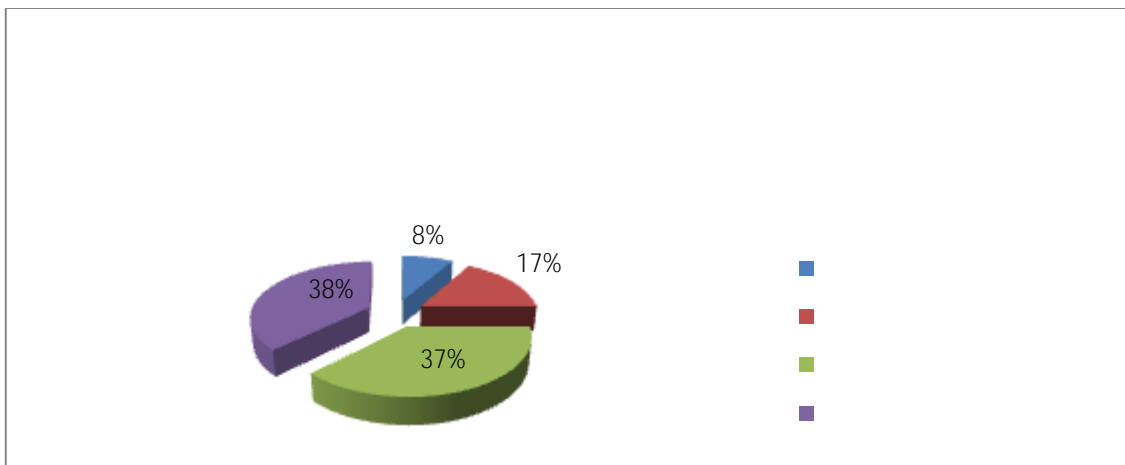


.20: „  
“ , 93 135

69 %, ( 2.93).



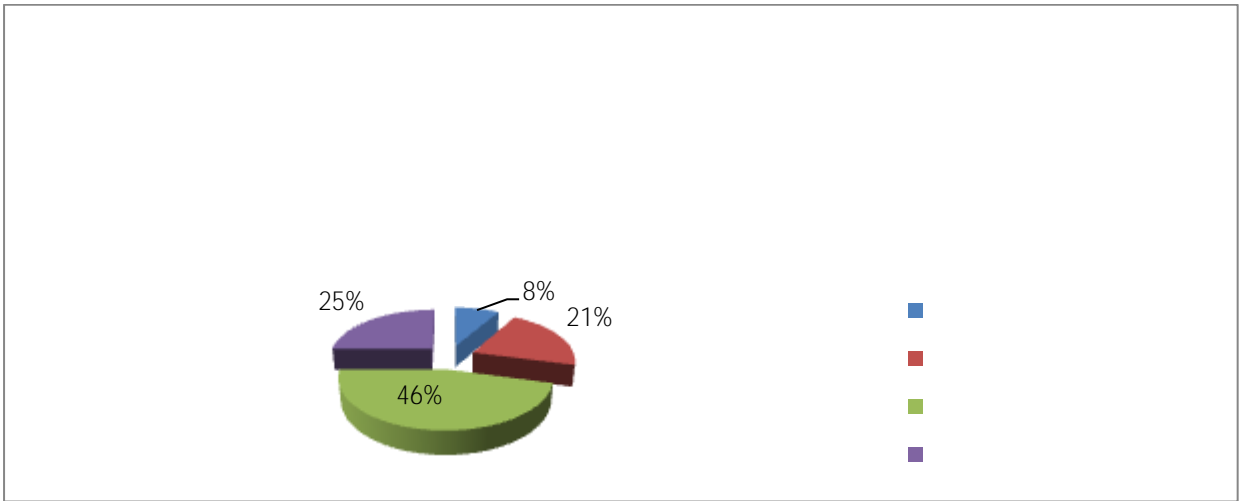
.21: „  
“ , 93 135 69 %, ( 2.98).





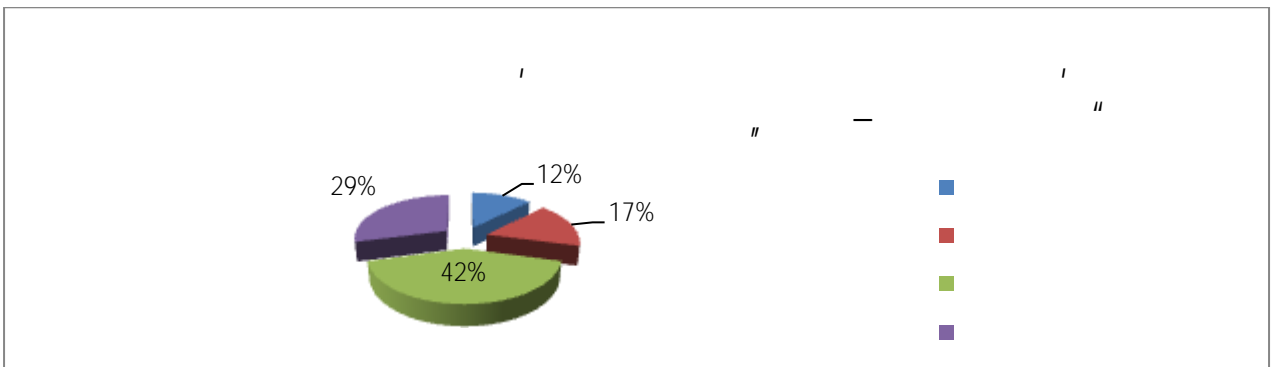
.22: „

96 71 % ( 2.93).



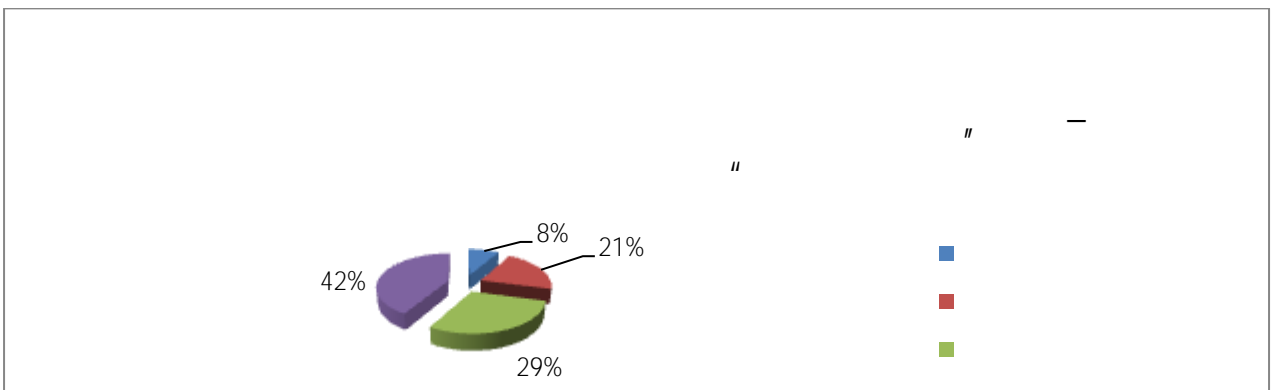
.23:

„ , , , „ -  
 „ . , , 87 64 % ( 2,82).

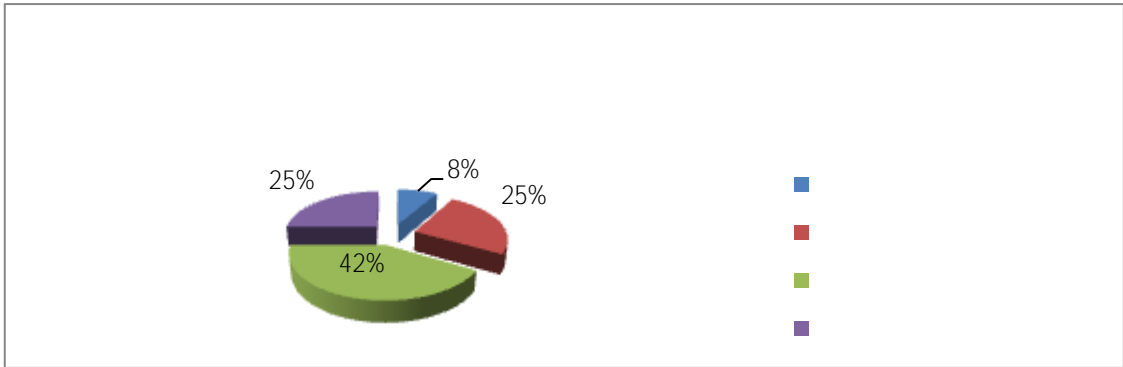


.24:

„ - „ , ,  
 81 60 % ( 2.69).

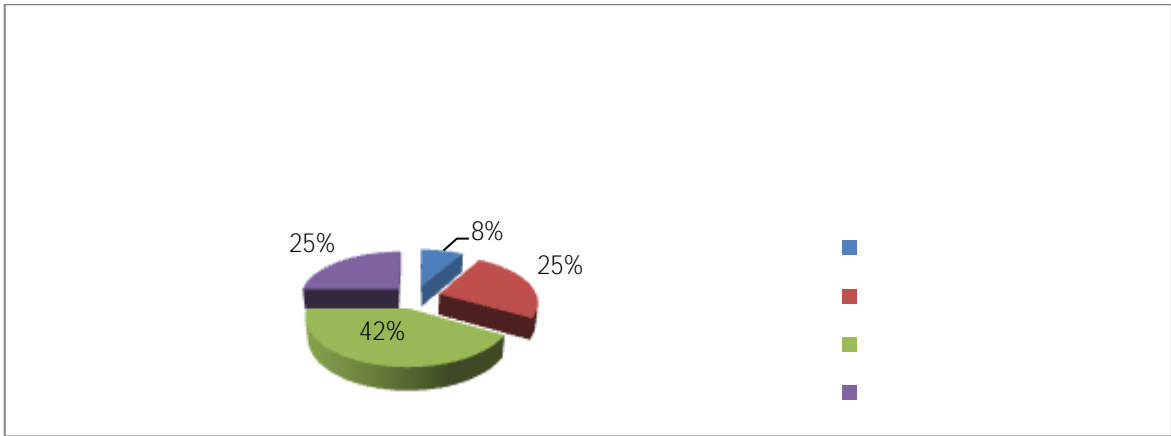


( 2.91).



, .26,

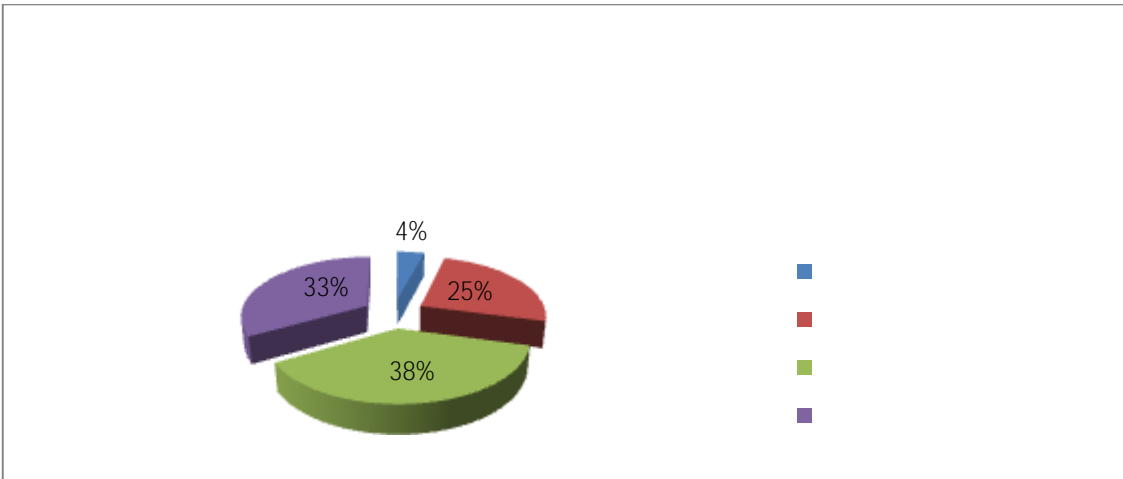
( 2.98 84 %).



.27:

”

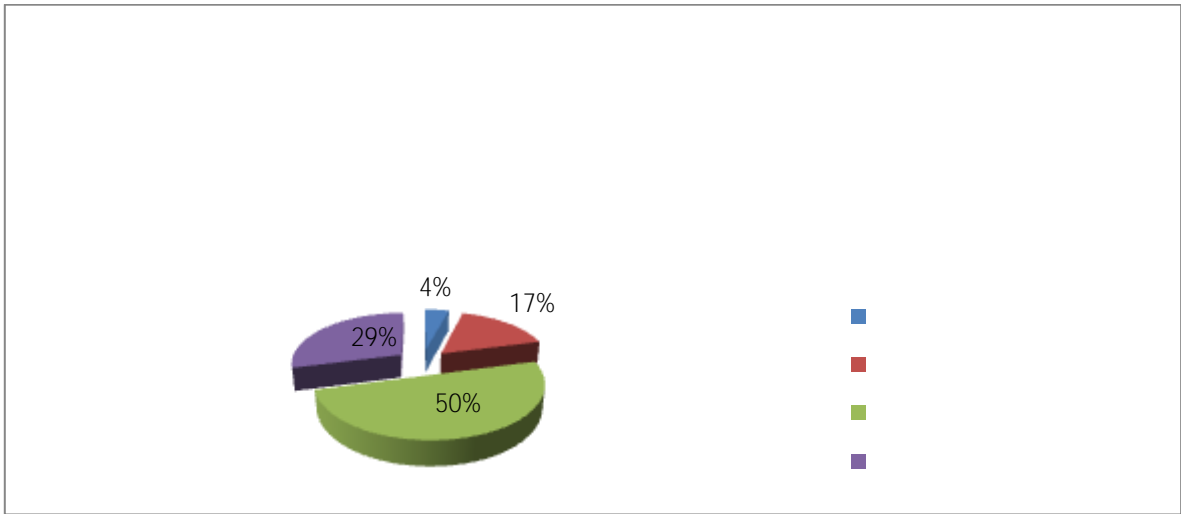
“( 3.02 78%).



.28: „

“

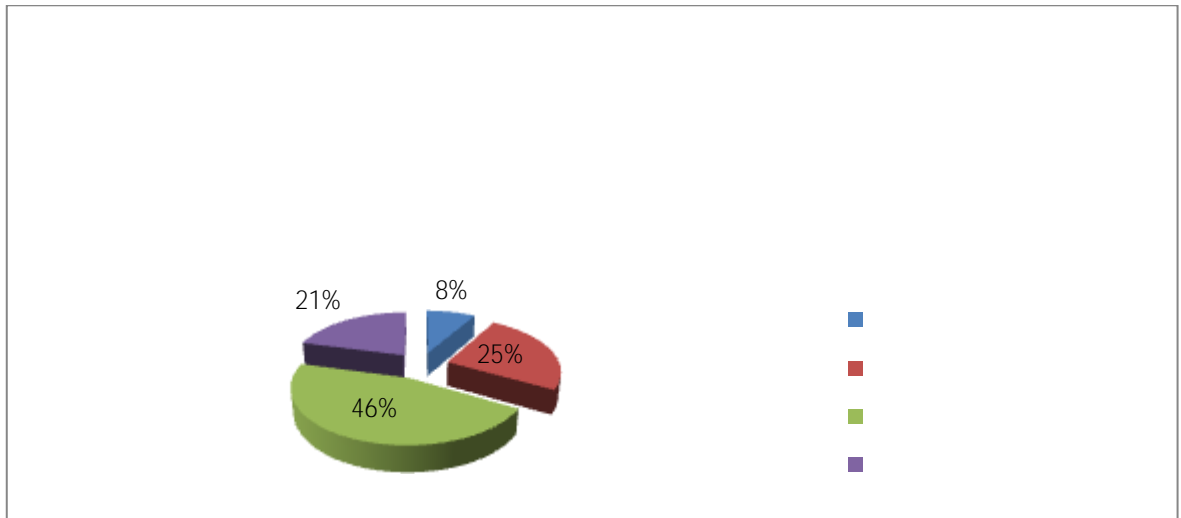
( 3.02 78 %).



. 29: „

“ 80%

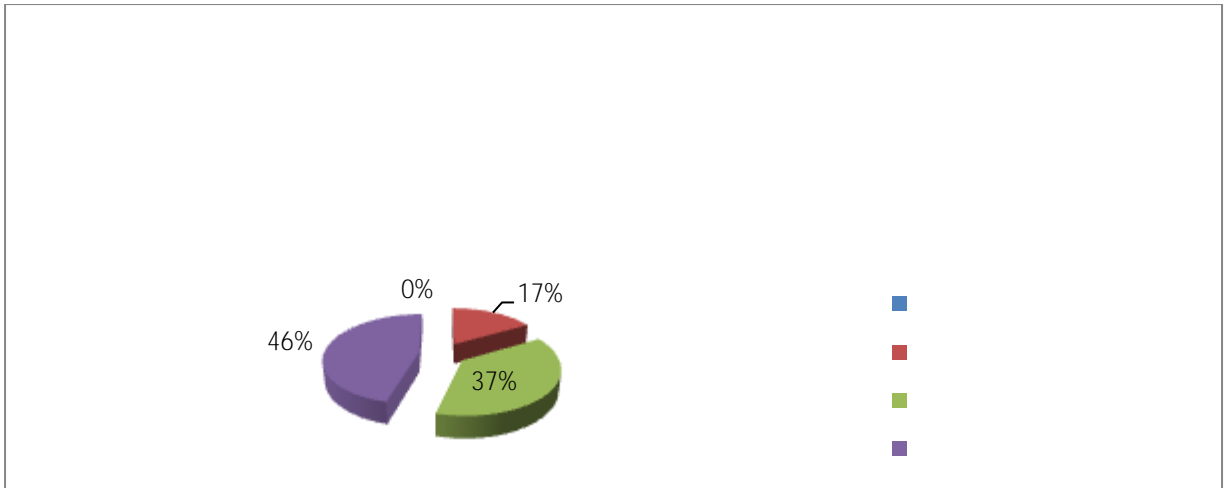
, 3.00.



89% ( 3.78)

.30

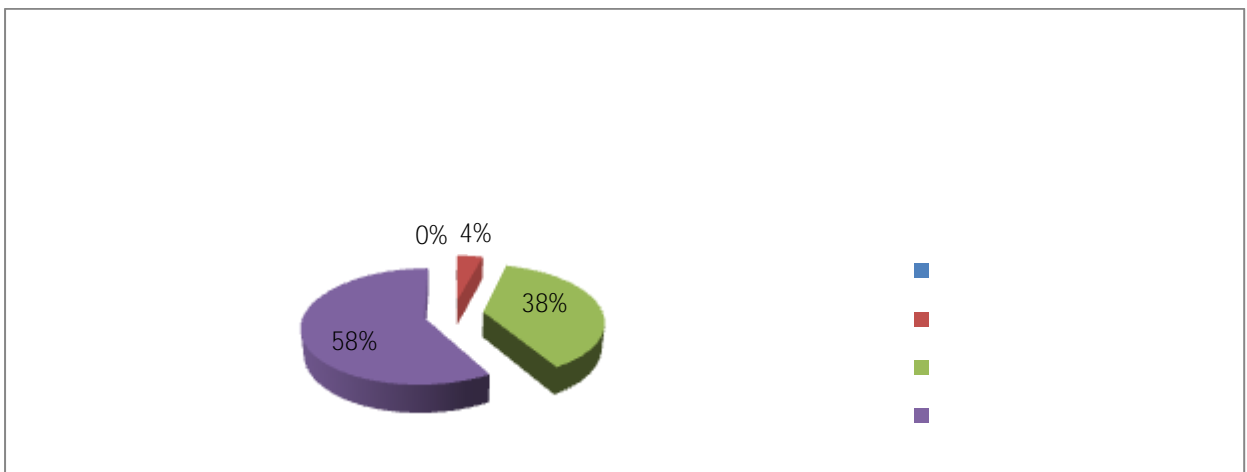
:



.31: ,,

“ (87%

3.18).



**1.3**

, 225 274 49 .  
:

		1	2	3	4	
1		3	66	121	84	3.04
2		8	43	124	99	3.15
3		60	62	92	60	2.55

4		28	92	112	42	2.61
5	,	48	108	90	28	2.36
6	,	1	2	3	4	
6.1		54	60	114	46	2.55
6.2		56	68	114	36	2.47
6.3		60	68	112	34	2.44
6.4		44	66	116	48	2.61
7	,	1	2	3	4	
7.1		52	86	90	46	2.46
7.2		40	72	116	48	2.64
7.3		48	64	118	44	2.58
7.4		48	62	106	58	2.64
8		34	76	108	56	2.68
9	,	1	2	3	4	
9.1		18	52	102	118	3.28
9.2		58	92	88	36	2.37
9.3		28	52	128	66	2.85
9.4	( )	20	56	96	118	3.26
9.5		14	38	114	108	3.15
9.6		26	66	121	61	2.79
10		38	122	88	26	2.37
11		6	61	145	62	2.96
12		19	41	135	79	3.00
13		33	49	116	76	2.86

14		11	59	141	63	2.93
15		13	79	134	48	2.79
16		17	69	124	64	2.86
17		8	74	122	70	2.93
18	:	14	42	104	114	3.16
	-	15	43	98	78	2.58
	-	13	45	102	114	3.16
	-	14	44	104	112	3.15
19		26	82	118	48	2.69
20		9	61	128	76	2.99
21		11	63	104	96	3.04
22		19	81	146	28	2.67
23	’ ” – ‘	11	67	102	94	3.02
24	” – “	5	39	114	116	3.24
25		44	82	122	26	2.47
26		26	54	134	60	2.83
27		12	64	141	57	2.89
28		14	79	142	39	2.75
29		16	72	131	55	2.83
30		5	41	92	136	3.31
31		11	29	106	128	3.28

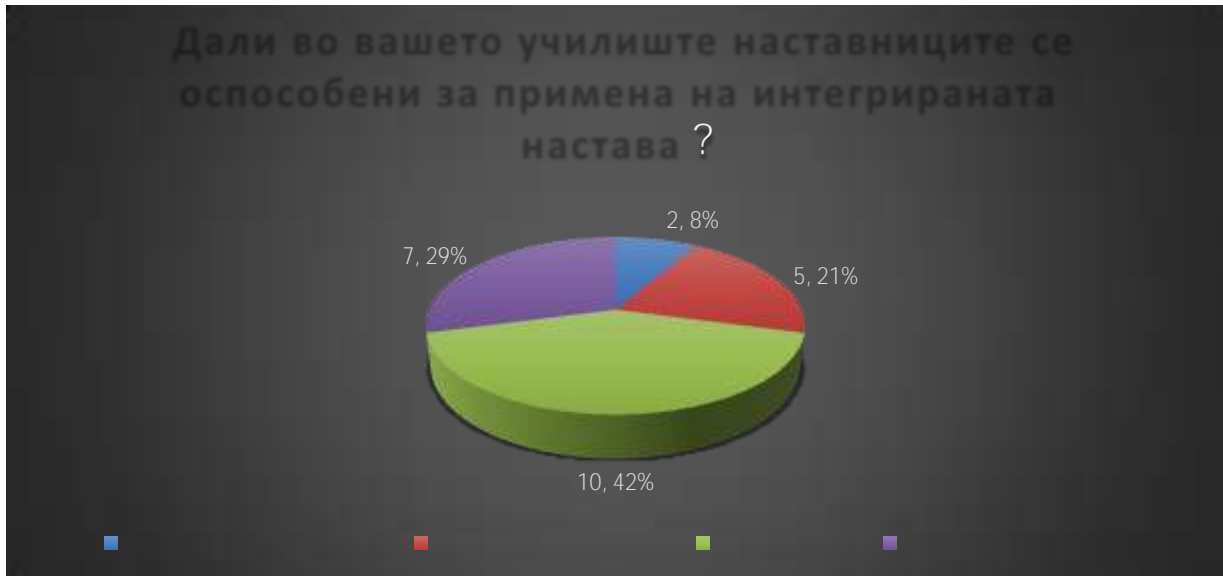
.1: „

“

, 205 274

75 %

( 3.04).



.2: „

“

223

81 %

( 3.15).



,

(

152

55 % -

2.55),

(

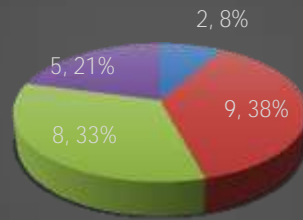
154

56 % -

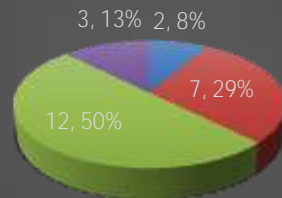
2.61).

179

Треба да се подобрат моите компетенции за примена на интегрираната настава



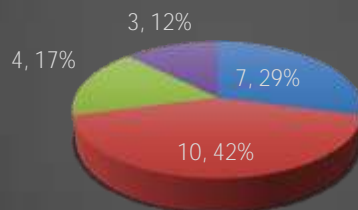
Компетенциите на вашите колеги за примена на интегрираната настава треба да се подобрат



.5: „ , ,

156 57 % ( 2.36).

Во пракса, се случува наставниците да ја обработат наставната тема, а подоцна сфатиле дека учениците тоа не го усвоиле



.6: „ , ,

“

:



„ “ 160 58 %  
( 2.55)



„ “ 150 55 %  
( 2.47)



„ “ 146 53 %  
( 2.44).



„ „ 164 60 %  
( 2.61).



.7: „ ,  
, „  
:

, 136 50 % ( 2.46).



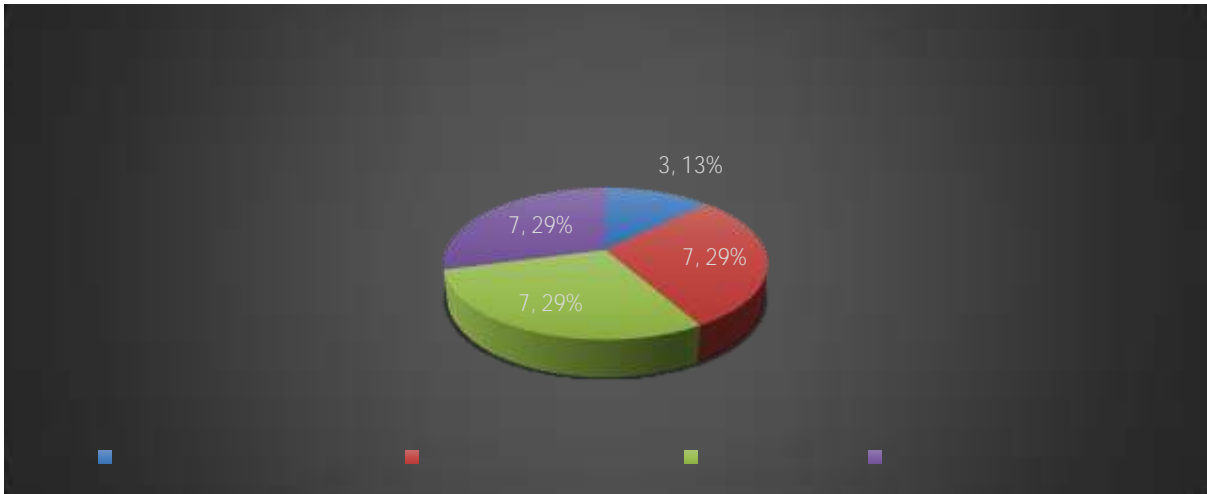
, , 164 60 %  
( 2.64).



59 % ( 2.58). , 162



( 2.64). , 164 60 %



.8:,,

“

164

60 % ( 2.68)



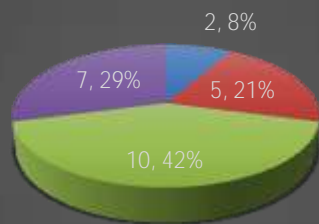
.9: ,,

“

, 230 84 % (

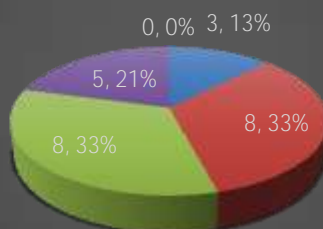
3.28).

### Да се зголеми поддршката од МОН и БРО



, 150 55 % – 2.37.

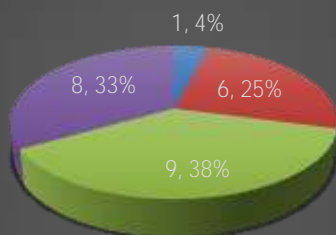
### Потребно е зголемување на бројот на наставни содржини кои треба да се реализираат со интегрираната настава



, 194 71 %

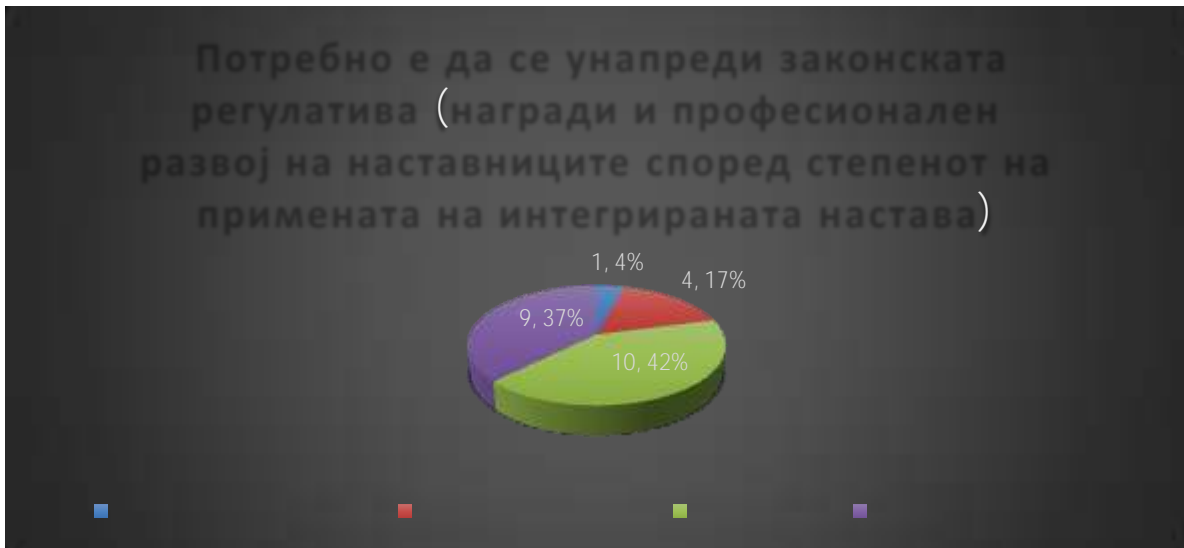
( 2.85).

### Потребно е да се зголеми поддршката на наставниците на ниво на училиште



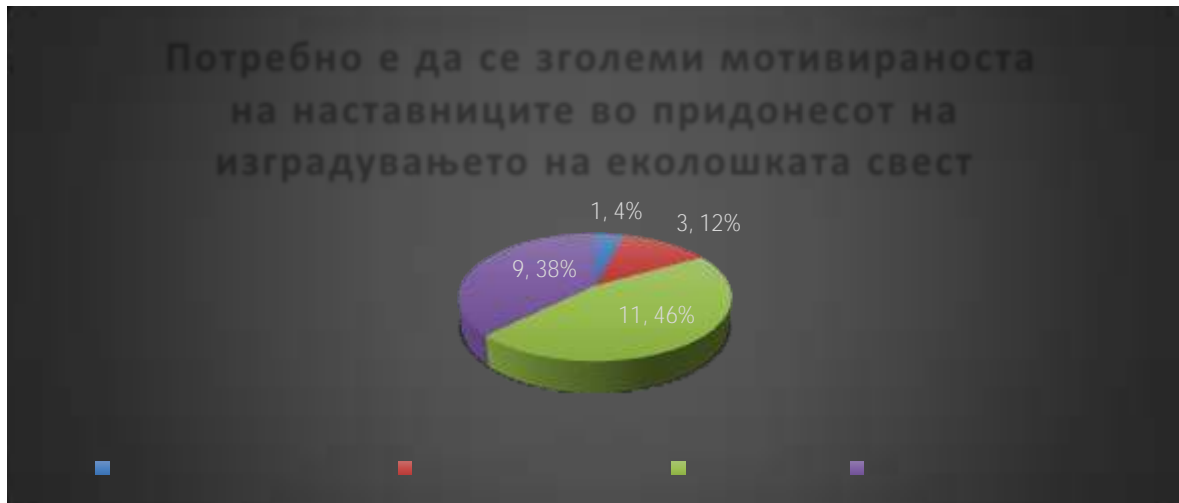
(

) 214 78 % ( 3.26).



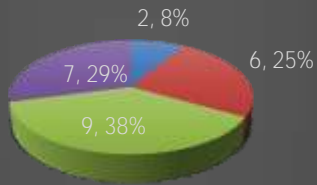
,

(222 81 % - 3.15).



(182 66 % - 2.79)

Потребно е да се зголеми нивото на еколошката едукација во наставата по различни предмети



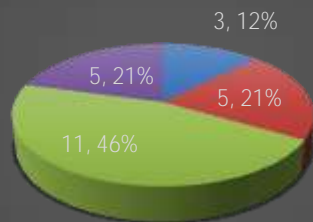
.10: „

“

(114 42 % - 2.37),

:

Вашите колеги се мотивирани за подигнување на еколошката едукација

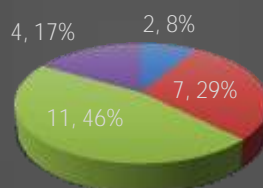


.11,

, 207

76 % ( 2.96).

Моите компетенции за примена на еколошката едукација во наставата се задоволителни



.12: „

“

, 214

78%

( 3.00).



.13: „

“

( 2.86).



.14: „

“,

,

204

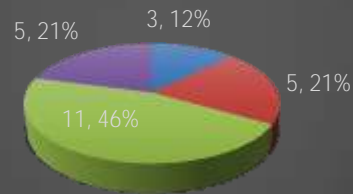
74

%

( 2.93).



Вашите колеги ја добиваат потребната лична поддршка за примена на интегрираната настава од страна на директорот и стручните соработници



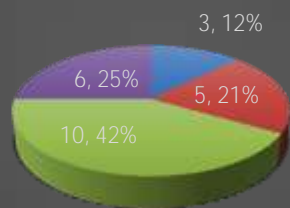
34 %

”

“

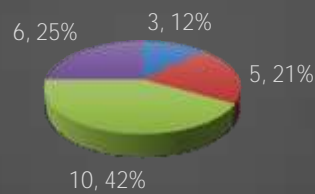
( 2.79).

Проектите од областа на екологијата претставуваат предизвик во наставниот процес



( 2.86).

Колку во вашиот наставен предмет се застапени содржини од екологија



.17: „  
“ 192 70 %

( 2.93).



.18: „

:

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“

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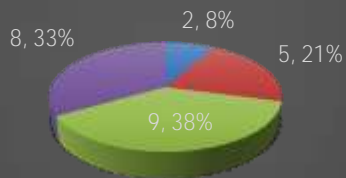


.19: „  
 “ 108 39 %  
 ( 2.69).



.20: „  
 “ , 204 274  
 74 %, ( 2.99).

Наставниците се запознати со придобивките на рециклирањето на отпадните материјали



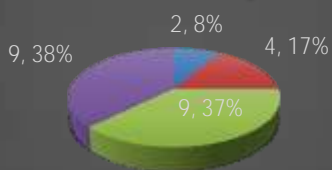
.21:.,

“

, 200 274 73 %, ,

( 3.04).

Училиштето има соработка со локалната средина и учество во проекти од областа на екологијата

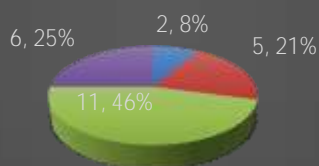


.22: ,,

“

174 64 % ( 2.67).

Граѓанскиот сектор претставува индивидуален предизвик на наставниците за да се интегрира еколошката едукација во наставата



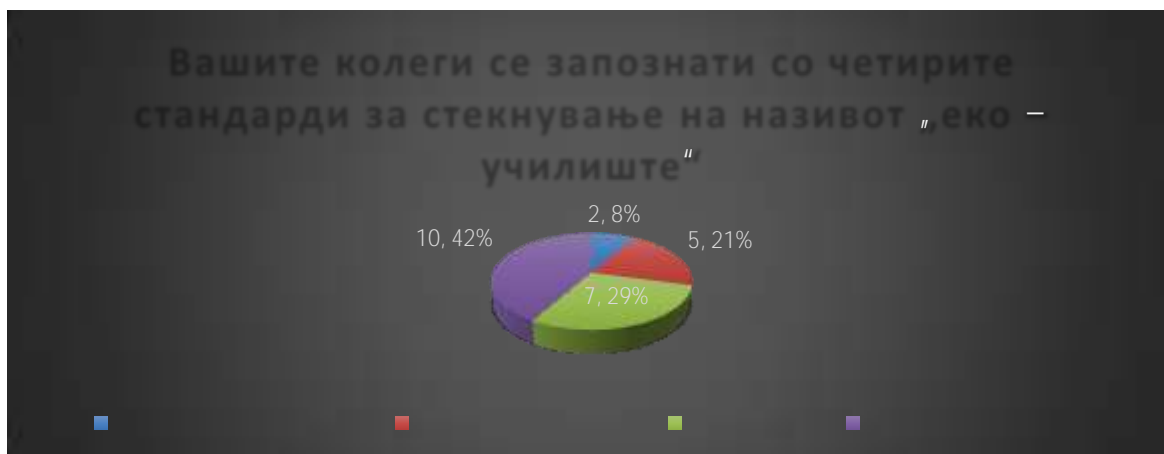
.23: „

, 196 72 % ( 3.02).



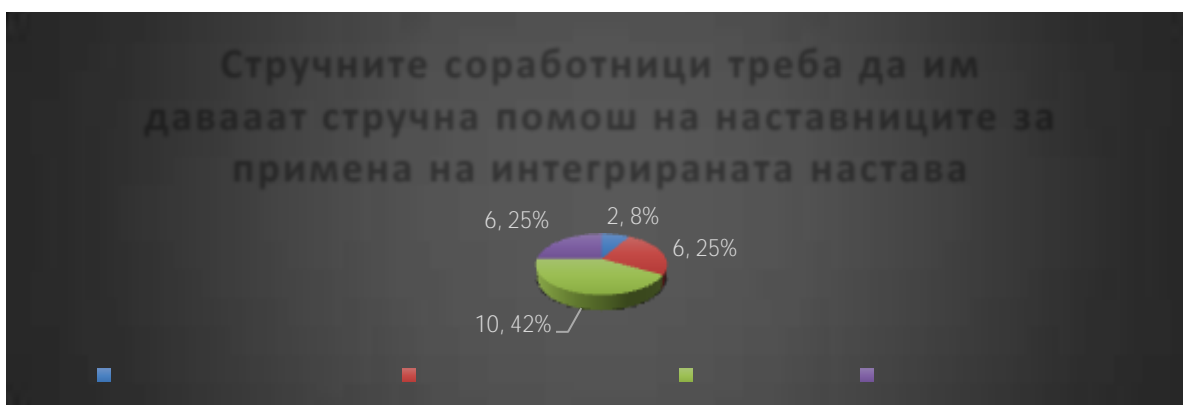
.24:

„ — “; 230 84 %  
( 3.24).



.25,

126 46 %  
( 2.47).



.26,

( 2.83 71 %).



.27:

”

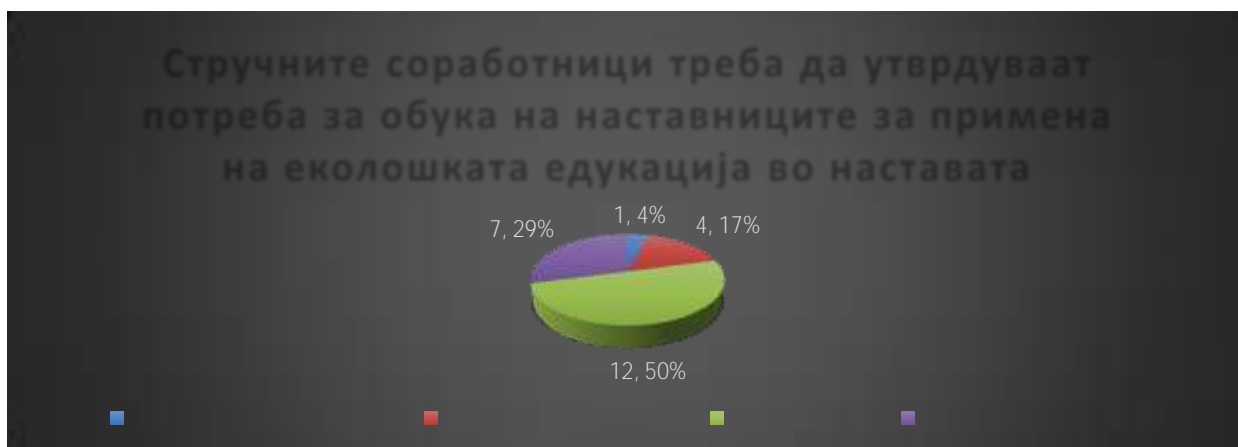
“( 2.89 72 %).



.28: „

“

( 2.75 66 %).



. 29: „

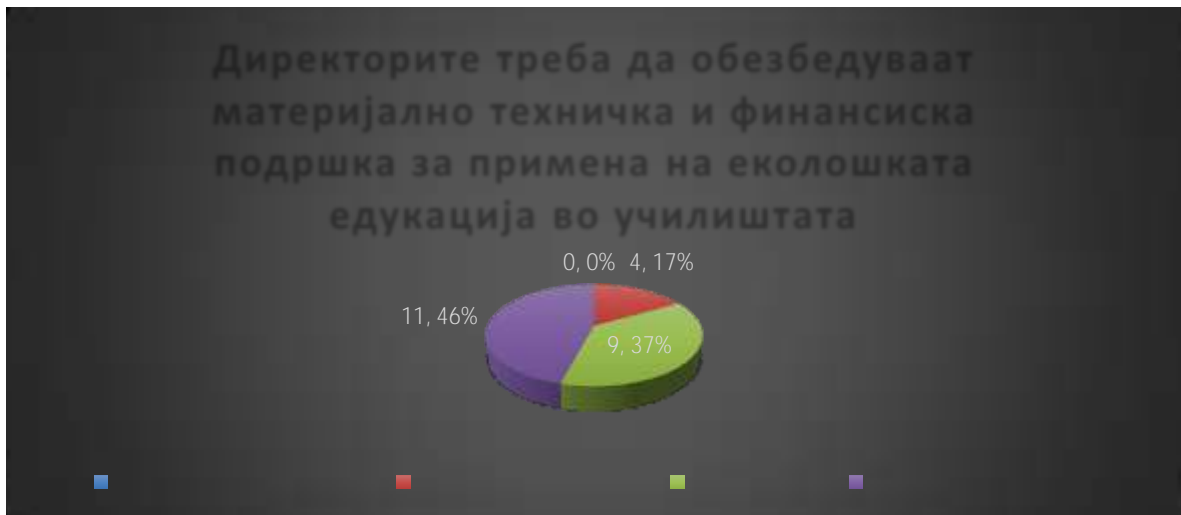
“ 68 %  
, 2.83.



83 % ( 3.31)

.30

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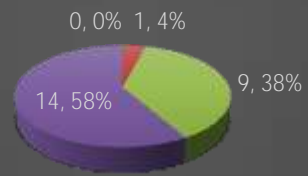


.31: „

“ (85 %

3.28).

Директорите треба да наоѓаат партнери во локалната средина за реализација на заеднички проекти од областа на екологијата





2.

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		-	-	-	-
1		3.67	2.92	2,69	3.04
2		3.67	3.00	3.09	3.15
3		3.33	2.67	2.84	2.55
4		3.33	2.67	3.04	2.61
5	,	3.08	2.13	3.04	2.36
6	,				
6.1		3.33	2.75	2.91	2.55
6.2		3.42	2.67	2.88	2.47
6.3		3.33	2.54	2.83	2.44
6.4		3.33	2.75	2.80	2.61
7	,				
7.1		3.42	2.75	2.89	2.46
7.2		3.42	2.75	2.98	2.64
7.3		3.42	2.79	3.00	2.58

7.4		3.42	2.75	3.00	2.64
8		3.33	2.88	2.91	2.68
9					
9.1		3.67	2.92	3.17	3.28
9.2		3.67	2.63	3.00	2.37
9.3		3.67	3.00	3.02	2.85
9.4	( )	3.75	3.13	3.00	3.26
9.5		3.75	3.17	2.91	3.15
9.6		3.67	2.88	3.02	2.79
10		3.42	2.75	2.60	2.37
11		3.08	2.71	2.87	2.96
12		3.00	3.13	3.09	3.00
13		3.00	2.88	3.09	2.86
14		3.00	2.75	2.51	2.93
15		3.08	2.79	2.84	2.79
16		3.08	2.79	2.73	2.86
17		3.50	2.71	2.96	2.93
18	- - - -	3.50 3.42 3.33 3.33	3.00 3.08 3.00 3.00	3.07 3.18 3.16 3.13	3.16 2.58 3.16 3.15
19		3.42	2.92	2.76	2.69
20		3.17	2.96	2.93	2.99

21		3.08	3.04	2.98	3.04
22		3.33	2.88	2.93	2.67
23	' ' - ''	3.50	2.88	2.82	3.02
24	'' - ''	3.42	3.04	2.69	3.24
25		3.50	2.88	2.91	2.47
26		3.42	2.83	2.98	2.83
27		3.33	3.00	3.02	2.89
28		3.42	3.04	3.02	2.75
29		3.58	2.79	3.00	2.83
30		3.42	2.88	3.78	3.31
31		3.33	3.54	3.18	3.28

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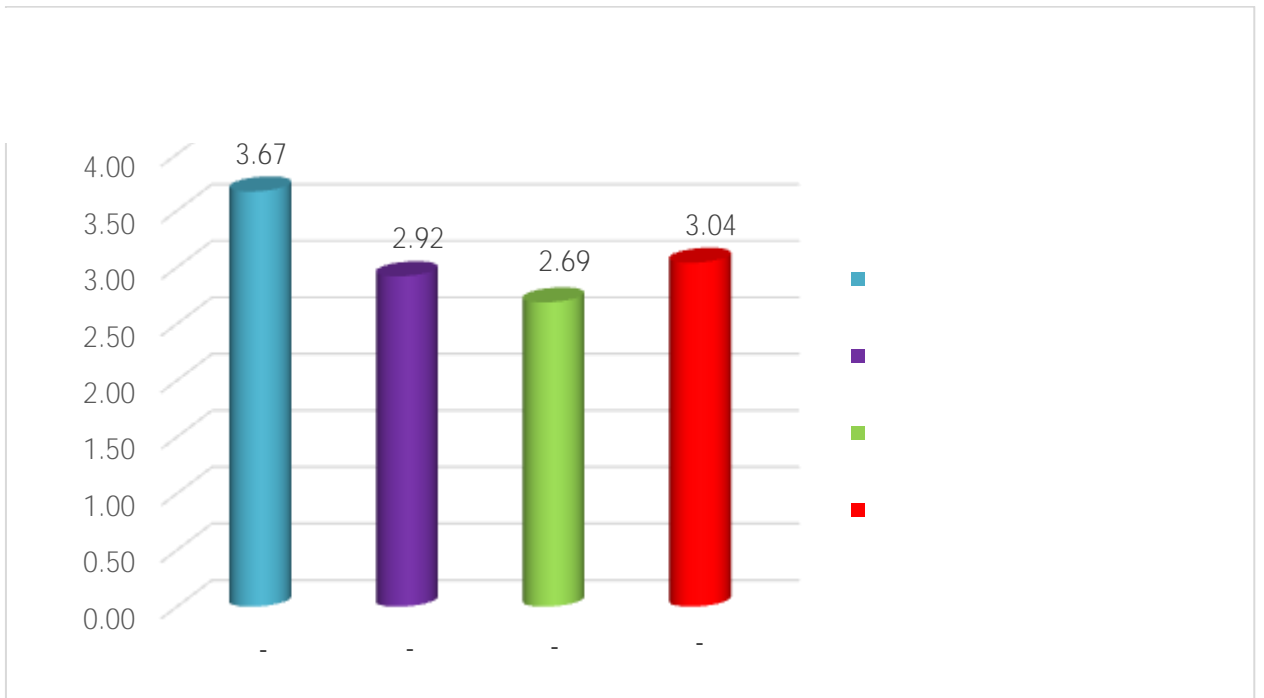
”

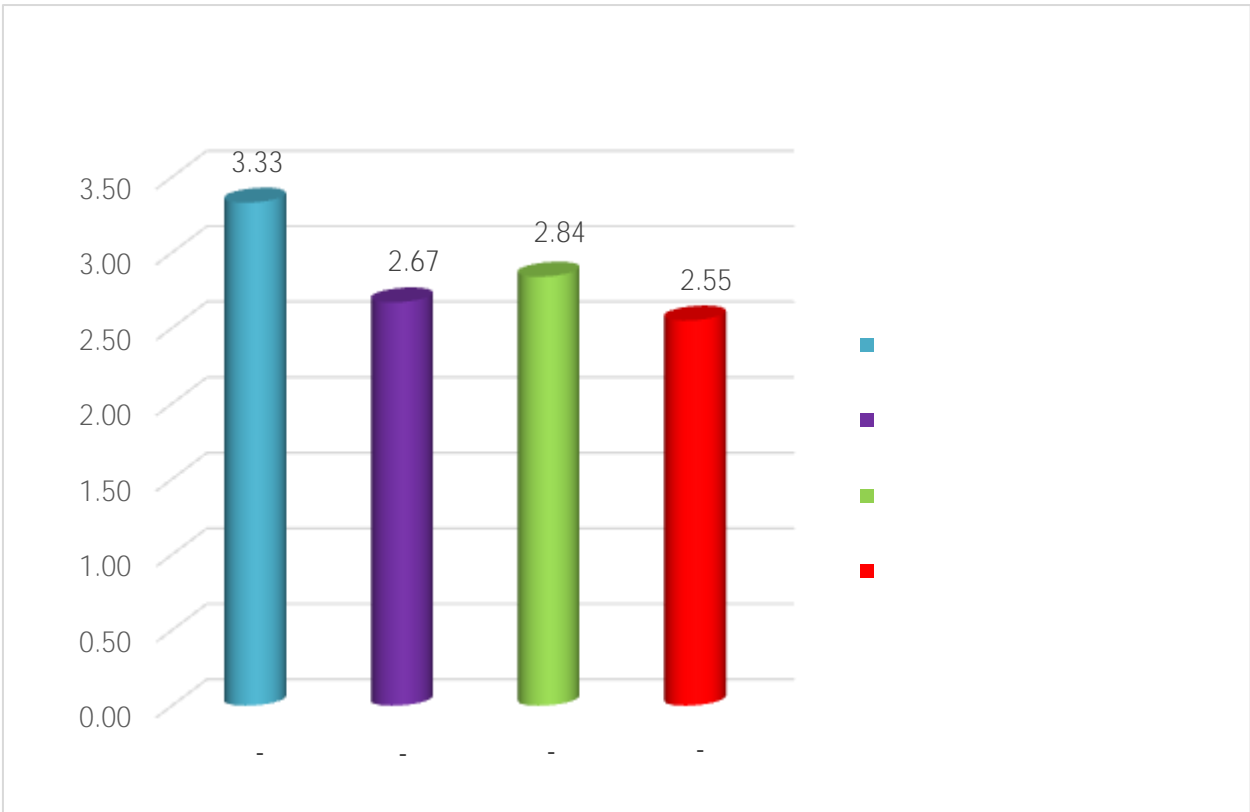
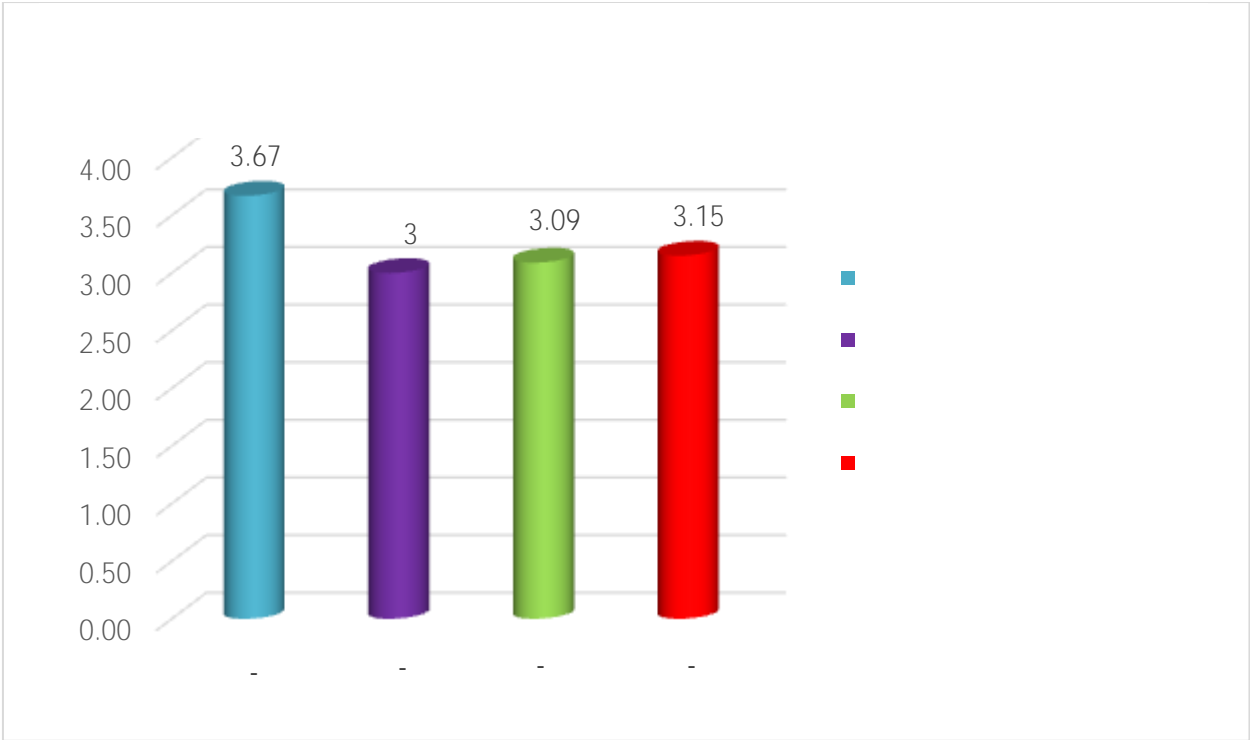
“

”

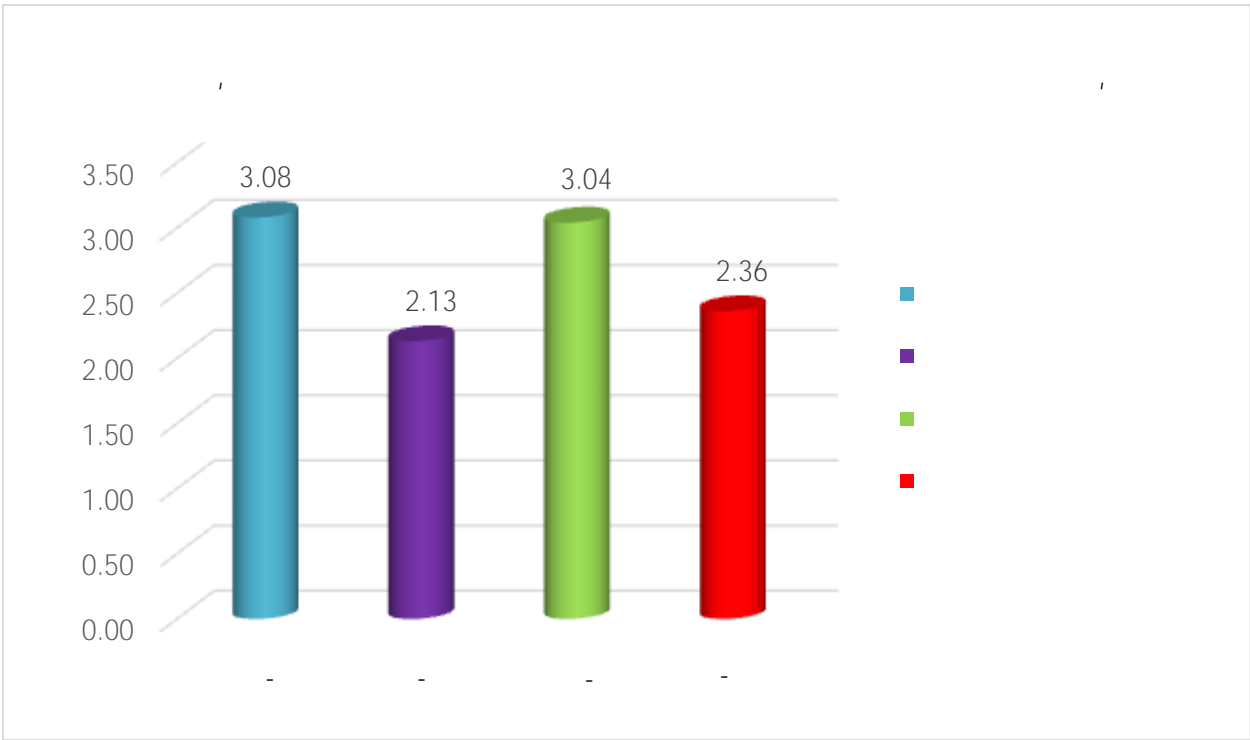
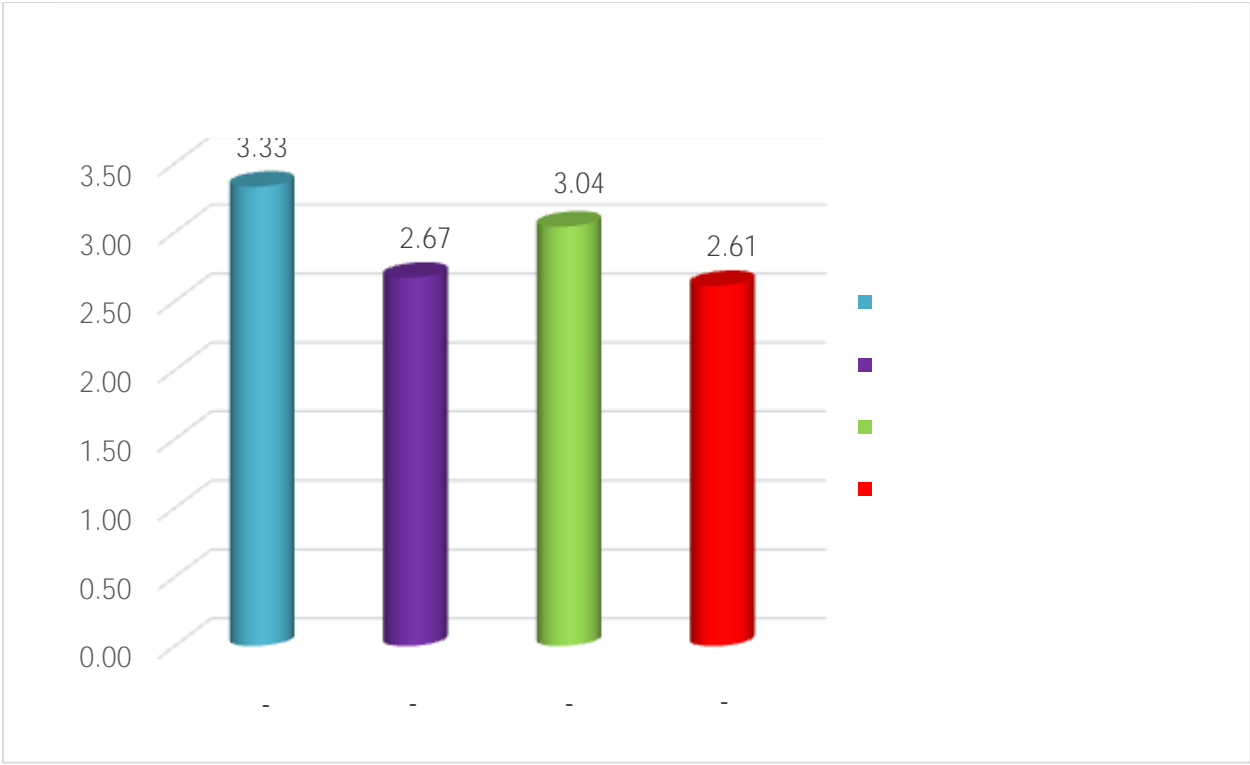
”

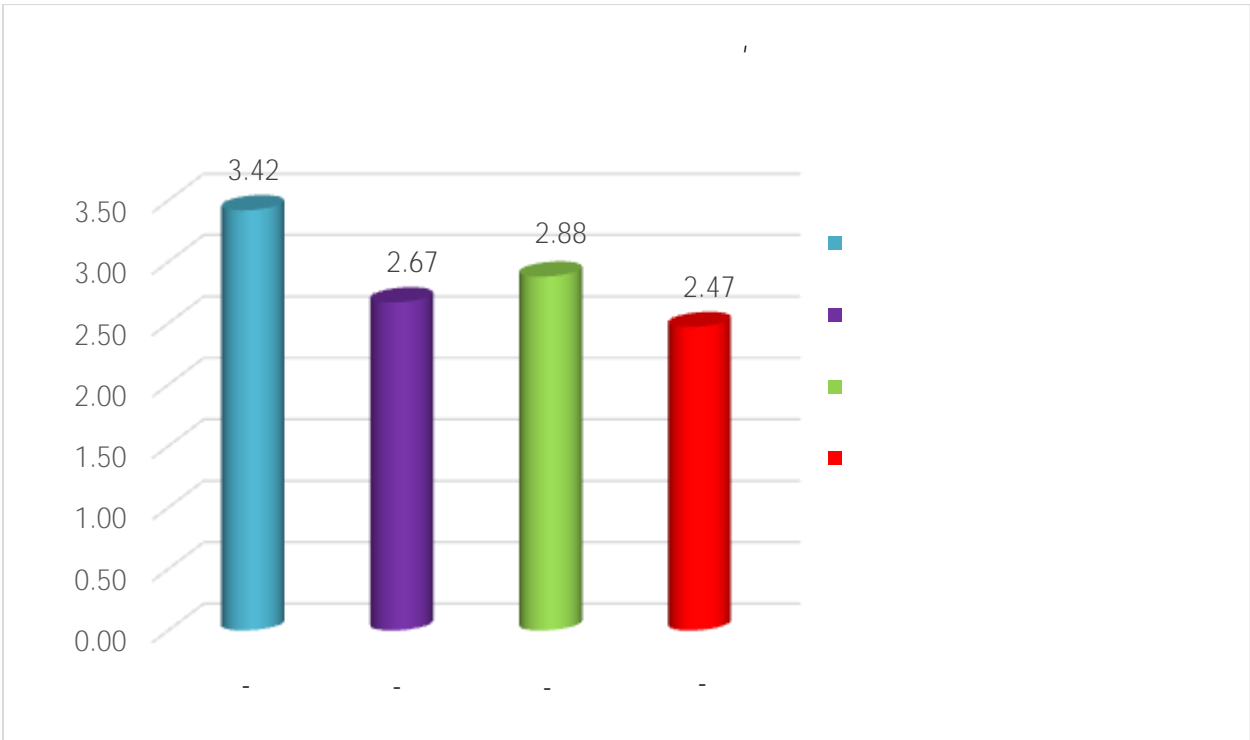
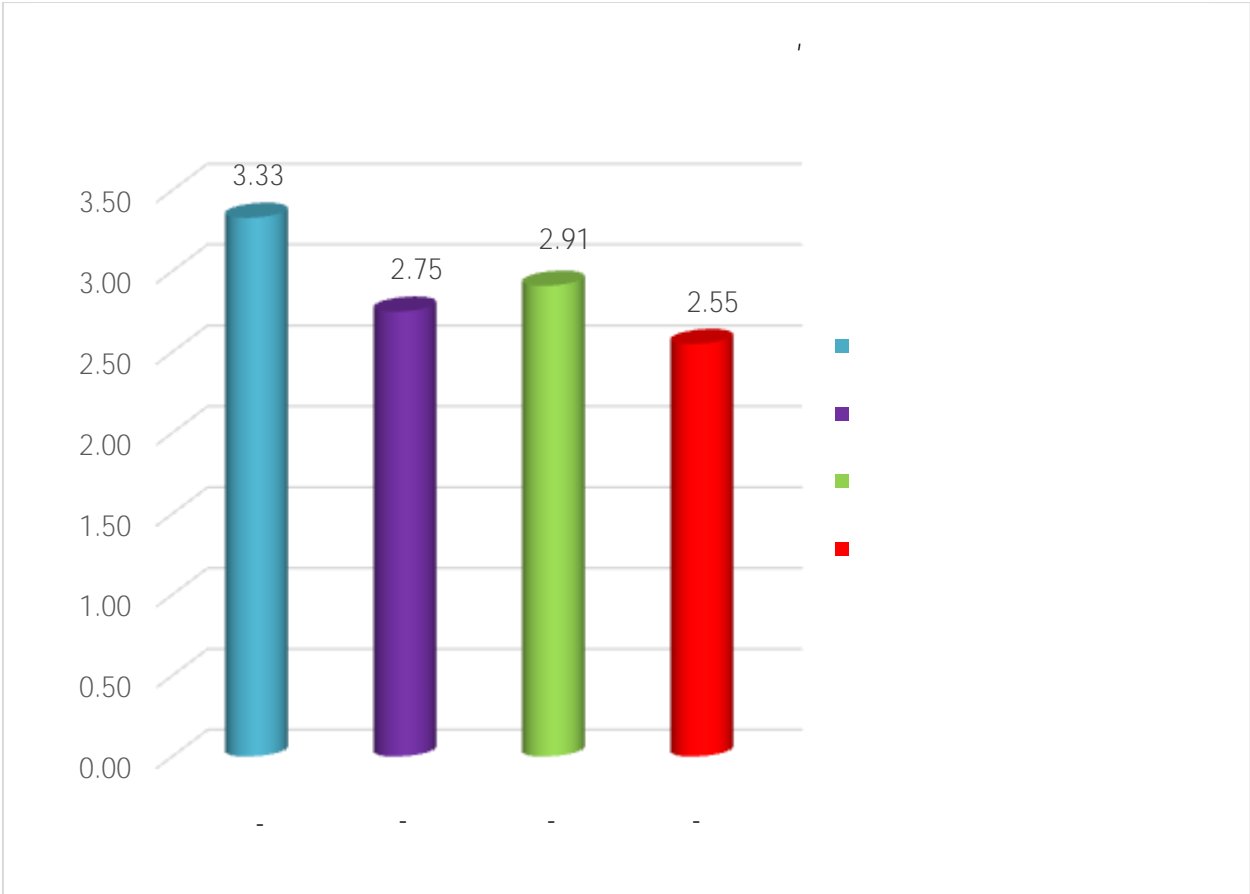
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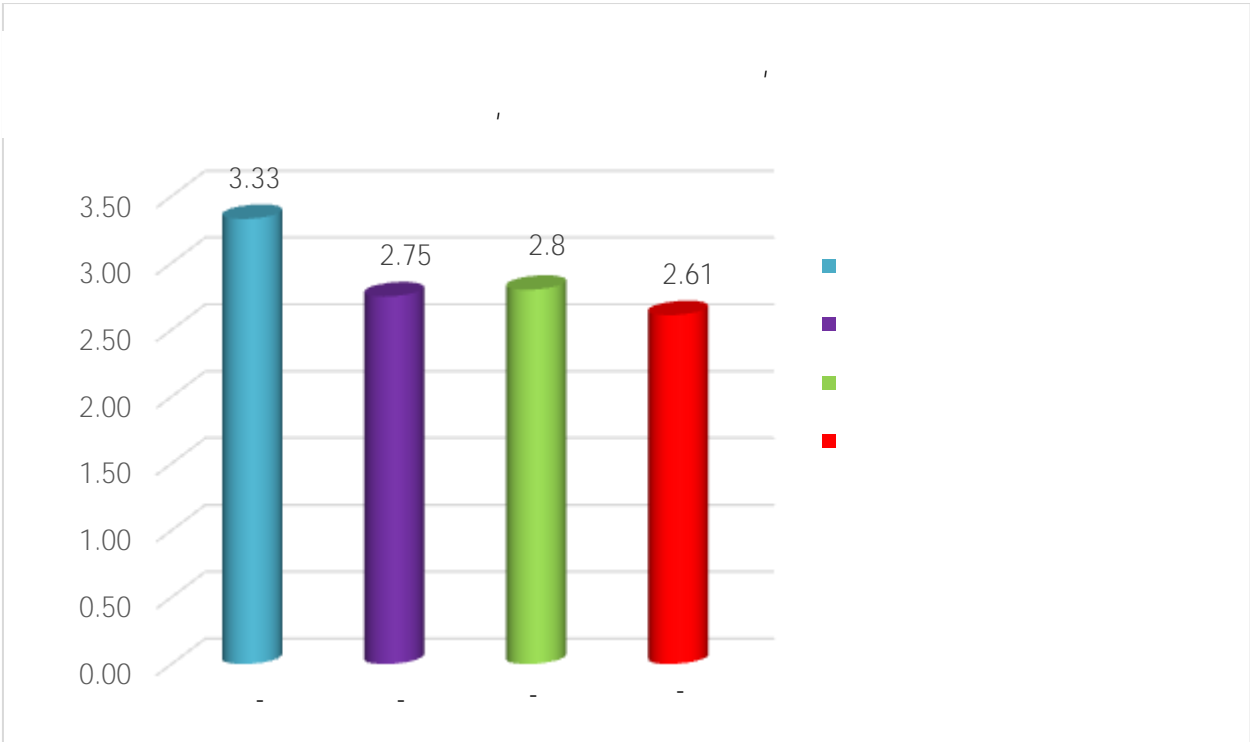
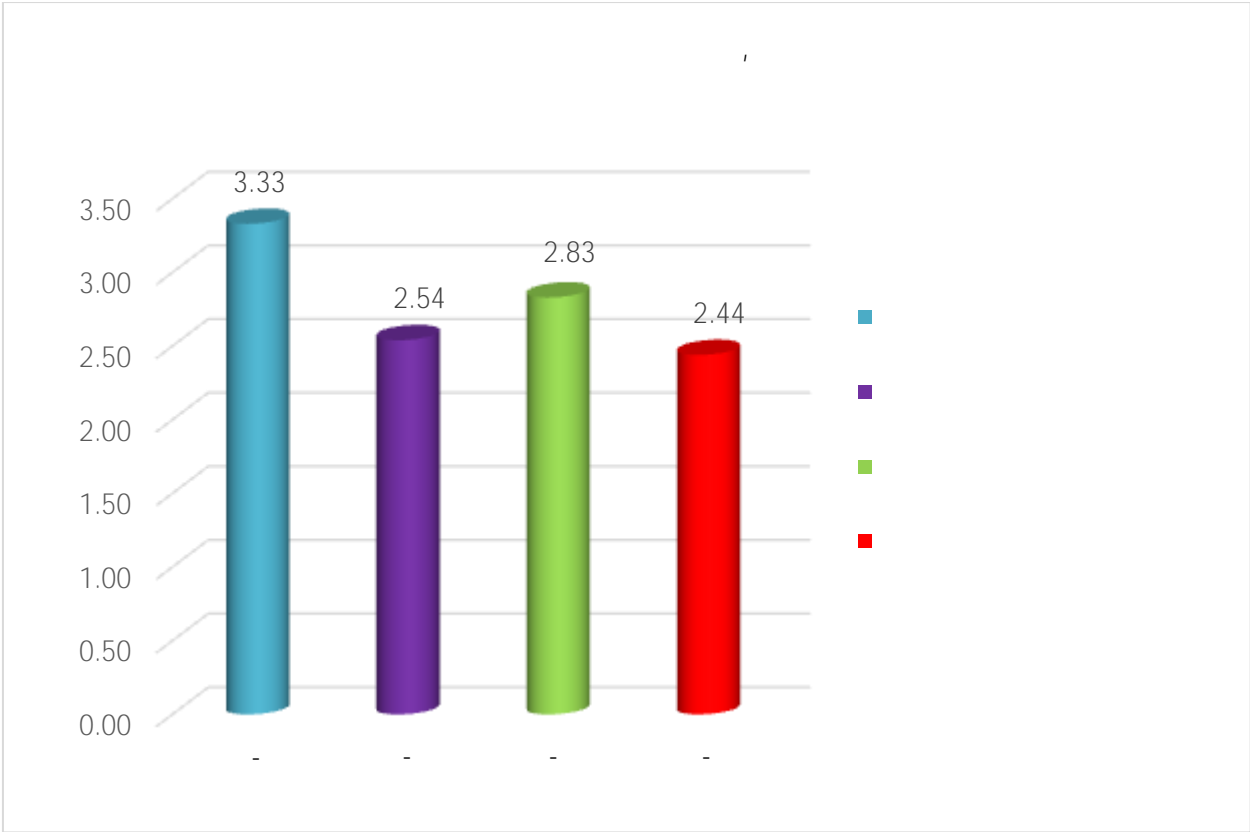


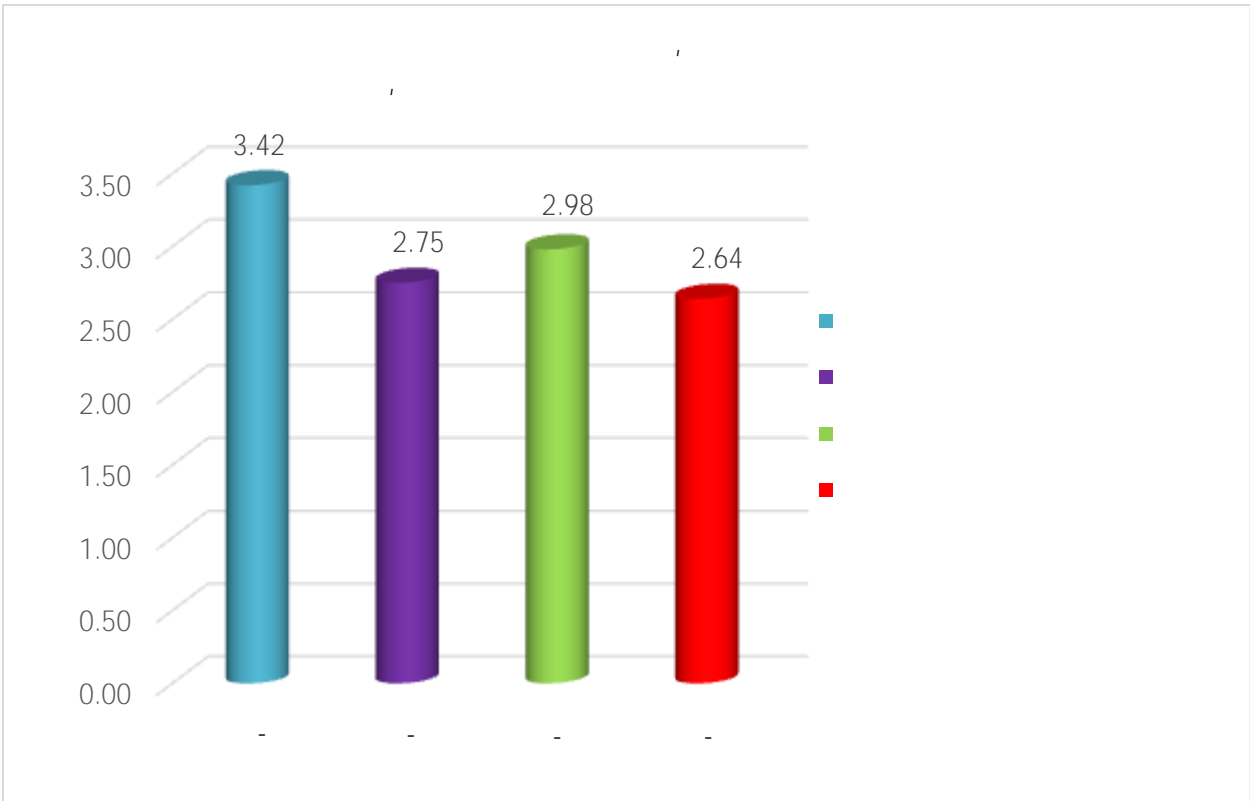
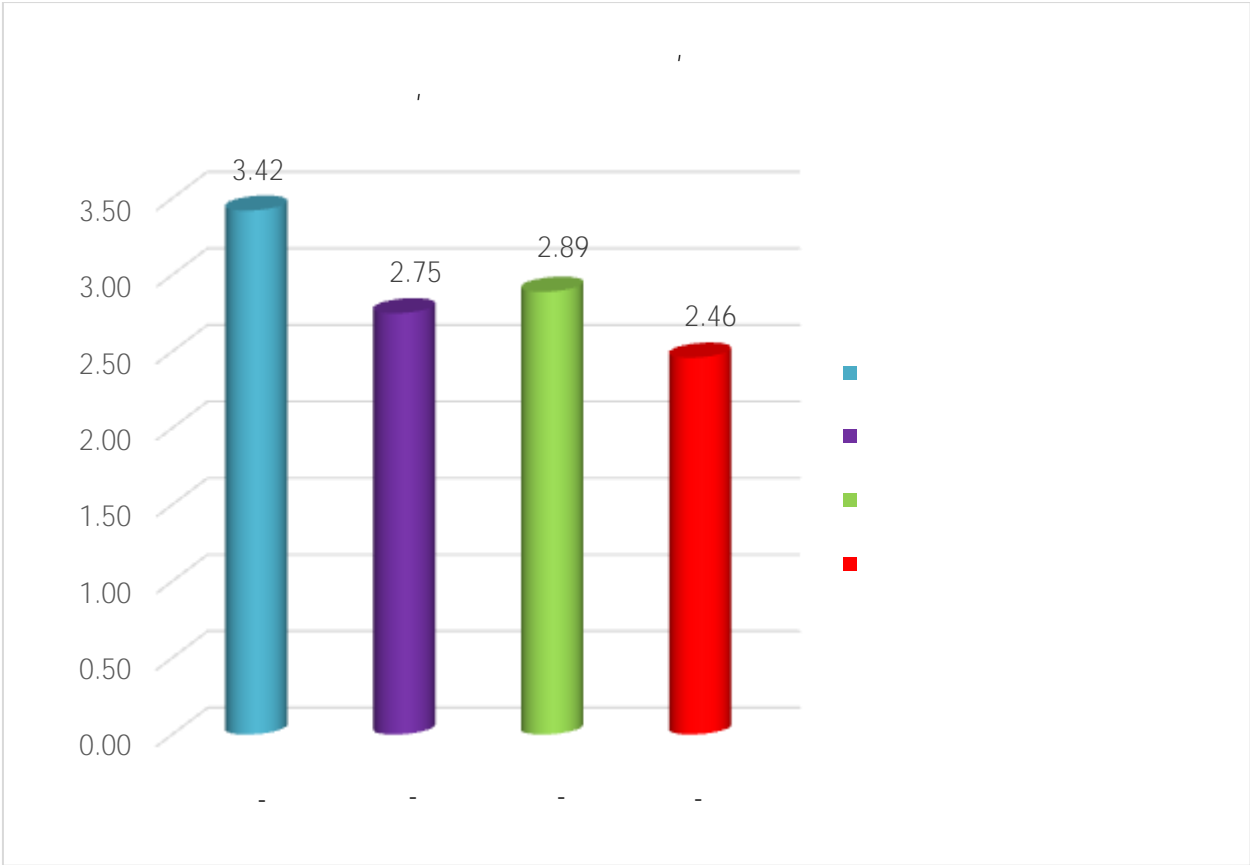


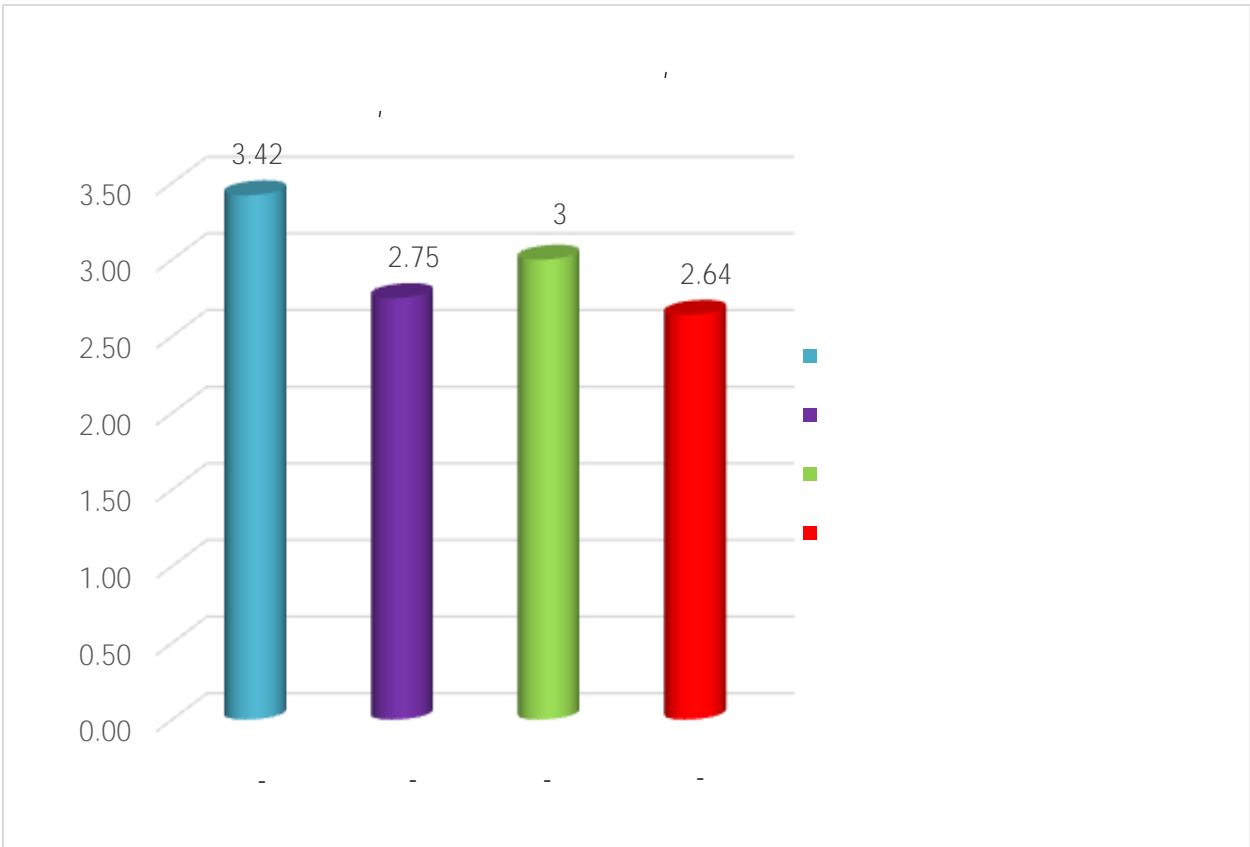
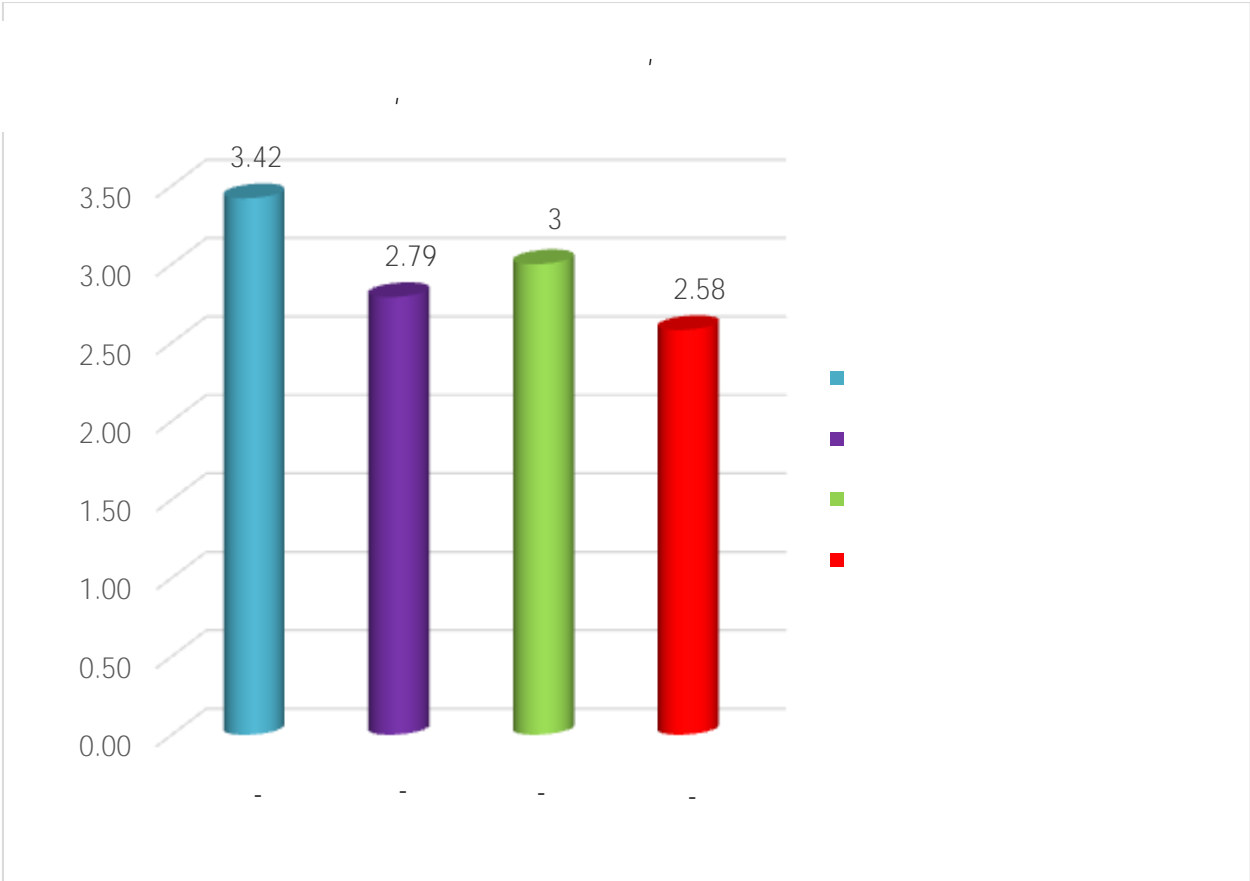


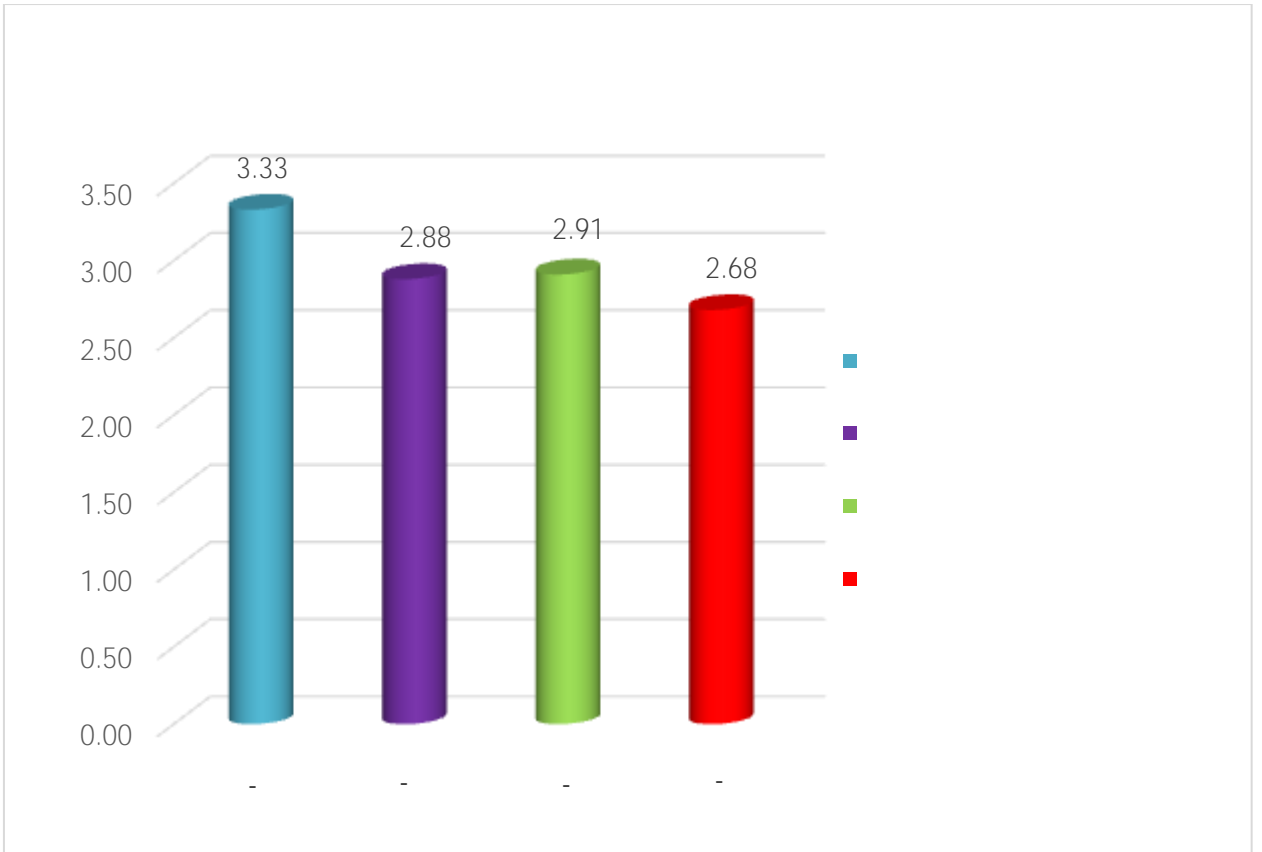












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	292	29	321
	117	7	124
	409	36	445

	/	/	/	/
( $n_i$ )	292	29	117	7
( $E_i$ )	295,031	25,969	113,969	10,031
( $n_i - E_i$ )	-3,031	3,031	3,031	-3,031
	9,190	9,190	9,190	9,190
(( $n_i - E_i$ ) <sup>2</sup> / $E_i$ )	0,031148	0,35388	0,08063	0,916093

Веројатност $\alpha$	0,05
	1

>	1
<	2

	1,381756
	3,84
	2



Ho,

3,

:

	245	25	270
	164	11	175
	409	36	445

	/ ,	, /	, /	, /
( $n_i$ )	245	25	164	11
( $E_i$ )	248,157	21,843	160,843	14,157
( $n_i - E_i$ )	-3,157	3,157	3,157	-3,157
	9,969	9,969	9,969	9,969
$((n_i - E_i)^2 / E_i)$	0,04017	0,45638	0,06198	0,704129

Веројатност $\alpha$	0,05
	1

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<	2

	1,262656
	3,84
	2



Ho,

8, :

,	257	30	287
,	152	6	158
	409	36	445



	, /	, /	/ ,	, /
( $\bar{x}_i$ )	257	30	152	6
( $E_i$ )	263,782	23,218	145,218	12,782
( $\bar{x}_i - E_i$ )	-6,782	6,782	6,782	-6,782
	45,996	45,996	45,996	45,996
(( $\bar{x}_i - E_i$ ) <sup>2</sup> / $E_i$ )	0,174371	1,981044	0,31674	3,598478

Веројатност $\alpha$	0,05
	1

>	1
<	2

	6,070629
	3,84
	2



Ho

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<sup>84</sup> Beadler G. A., ( 1993) : Management, Third Edition, The Dryden Press Harcourt Brace Jovanovich College Publishers Opland fl.,p. 470.

<sup>85</sup> (1995): „ „.246

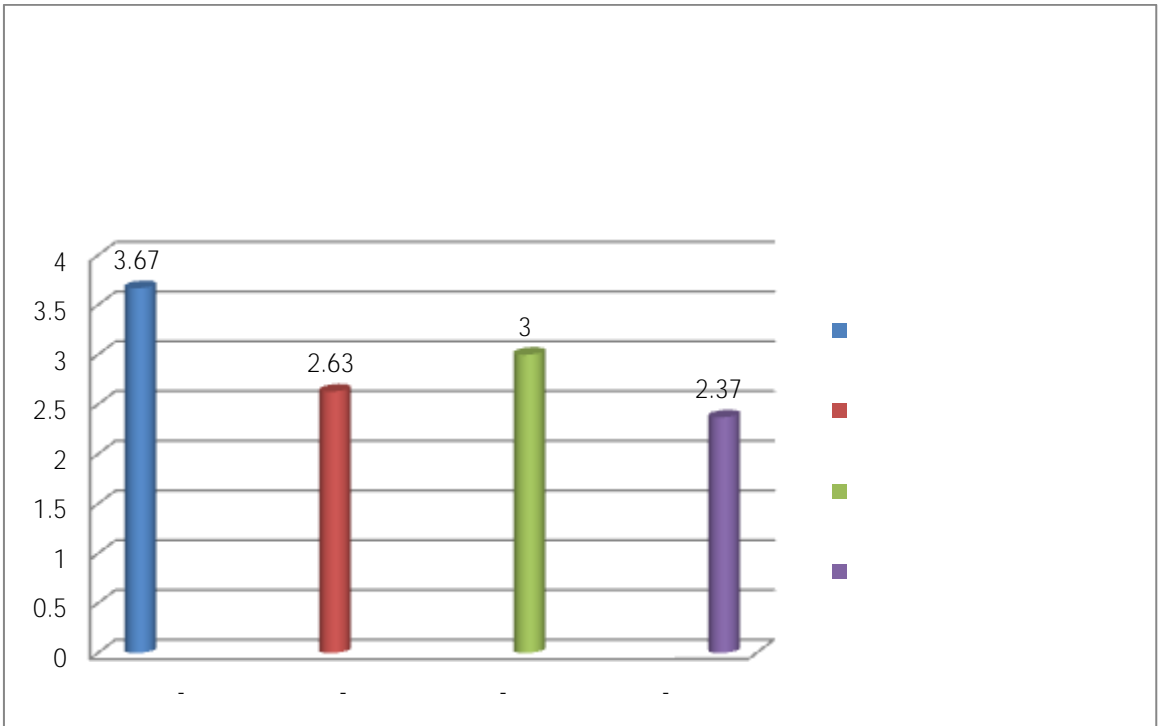
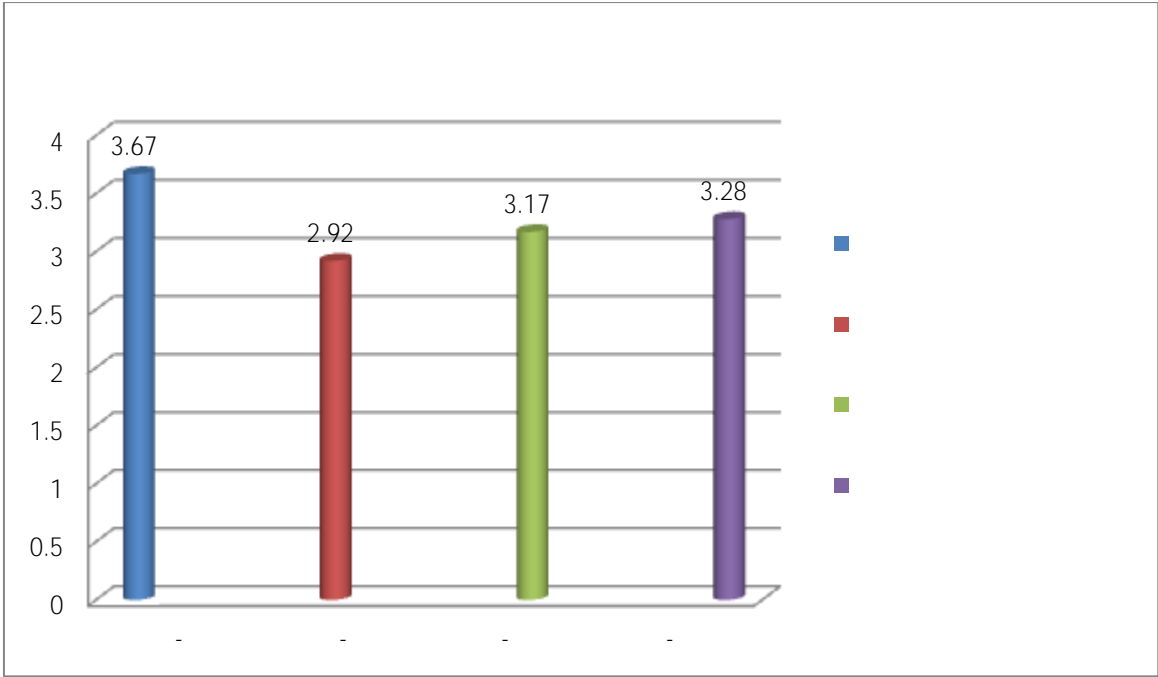
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<sup>86</sup> Stone, Deci and Ryan, Beyond Talk: Creating autonomus motivation through self- determination theory

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<sup>87</sup> Matsumura, Ryohei and Norimasa Kobayashi (Jan. 2008): „Are increased costs worth paying toraise non-monetary utility?:Analysis of intrinsic motivation and fringe benefits.” *International Transactions in operational research* 15, .705-715





( 9.4):

	238	25	263
	168	11	179
	406	36	442

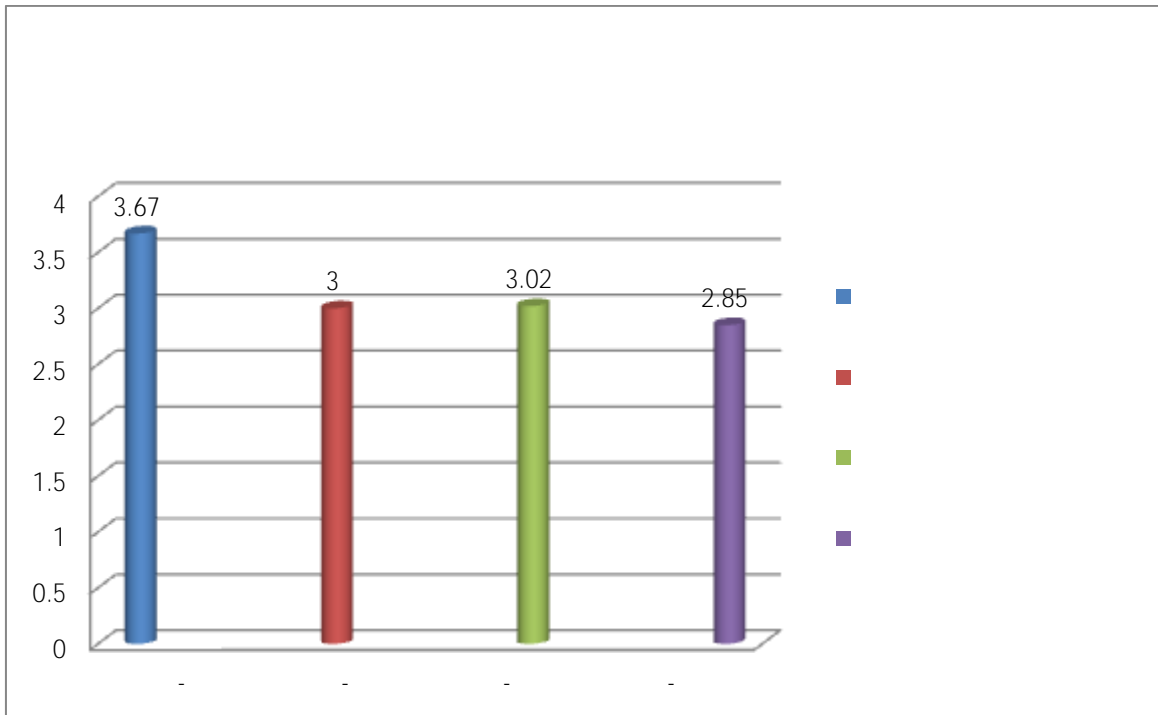
	/	/	/	/
( $i$ )	238	25	168	11
( $E_i$ )	241,579	21,421	164,421	14,579
( $i - E_i$ )	-3,579	3,579	3,579	-3,579
	12,811	12,811	12,811	12,811
(( $i - E_i$ ) <sup>2</sup> / $E_i$ )	0,053028	0,598043	0,07791	0,878689

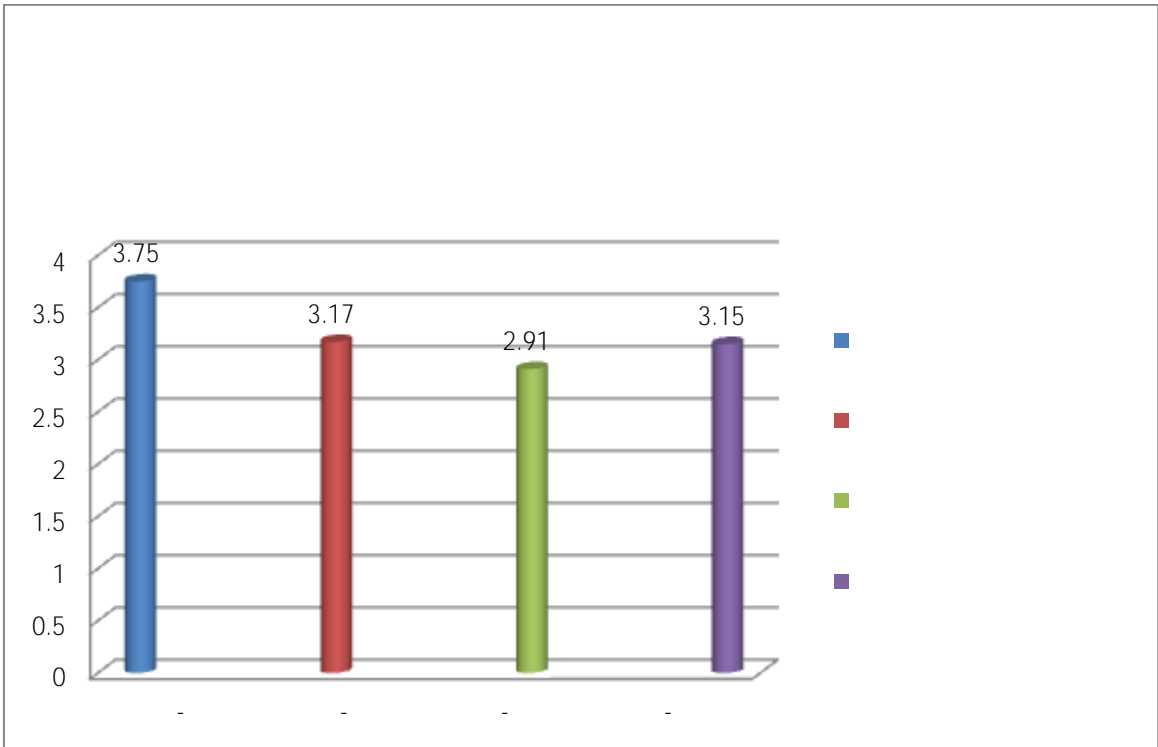
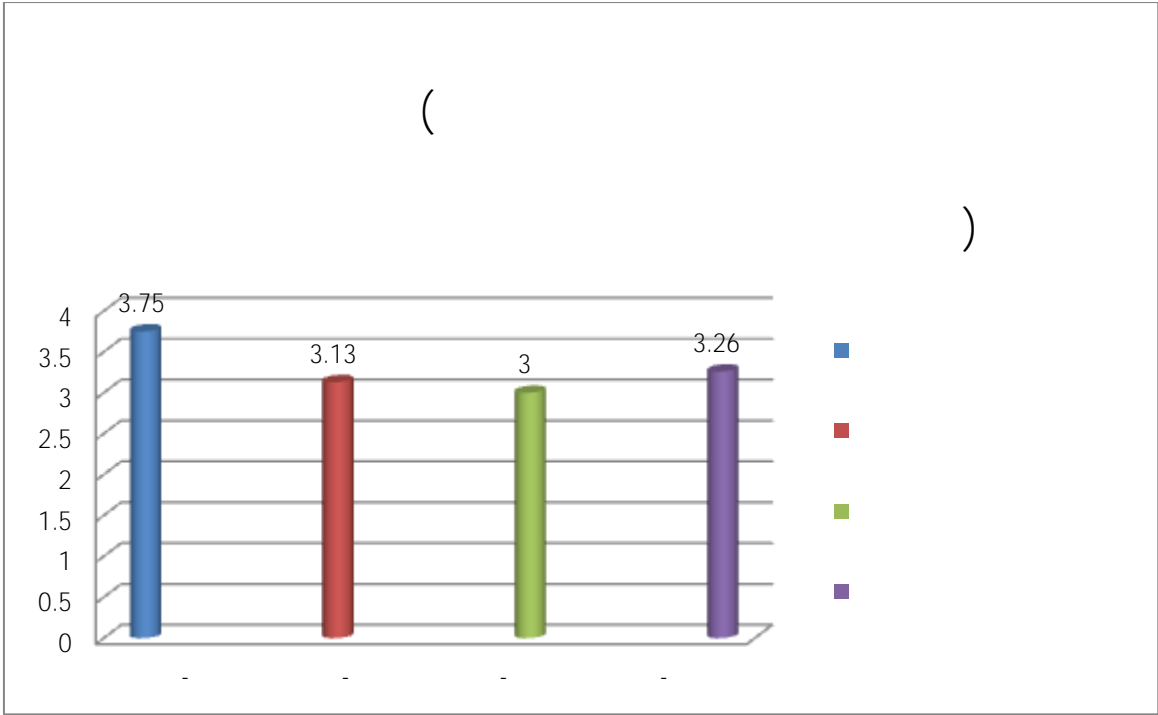
Веројатност $\alpha$	0,05
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	1,607674
	3,84
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	324	32	356
	85	5	90
	409	37	446

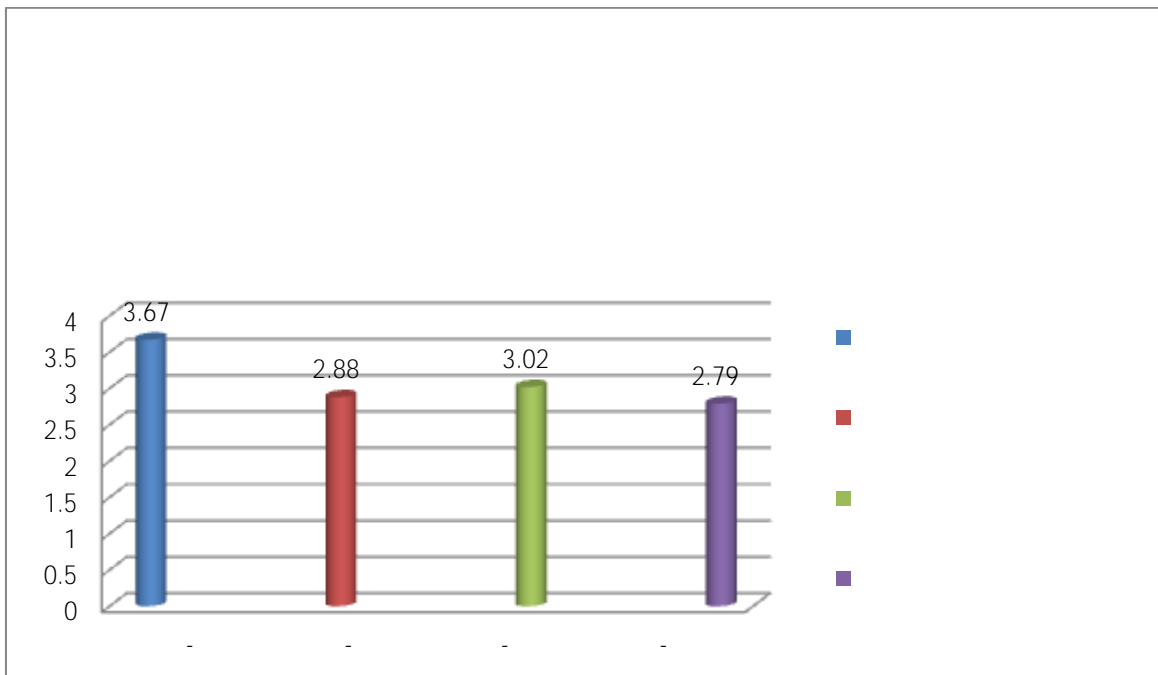
	/	,	/	,	/
( $f_i$ )	324	32	85	5	
( $E_i$ )	326,466	29,534	82,534	7,466	
( $f_i - E_i$ )	-2,466	2,466	2,466	-2,466	
	6,083	6,083	6,083	6,083	
(( $f_i - E_i$ ) <sup>2</sup> / $E_i$ )	0,018633	0,205968	0,0737	0,814716	

	0,05
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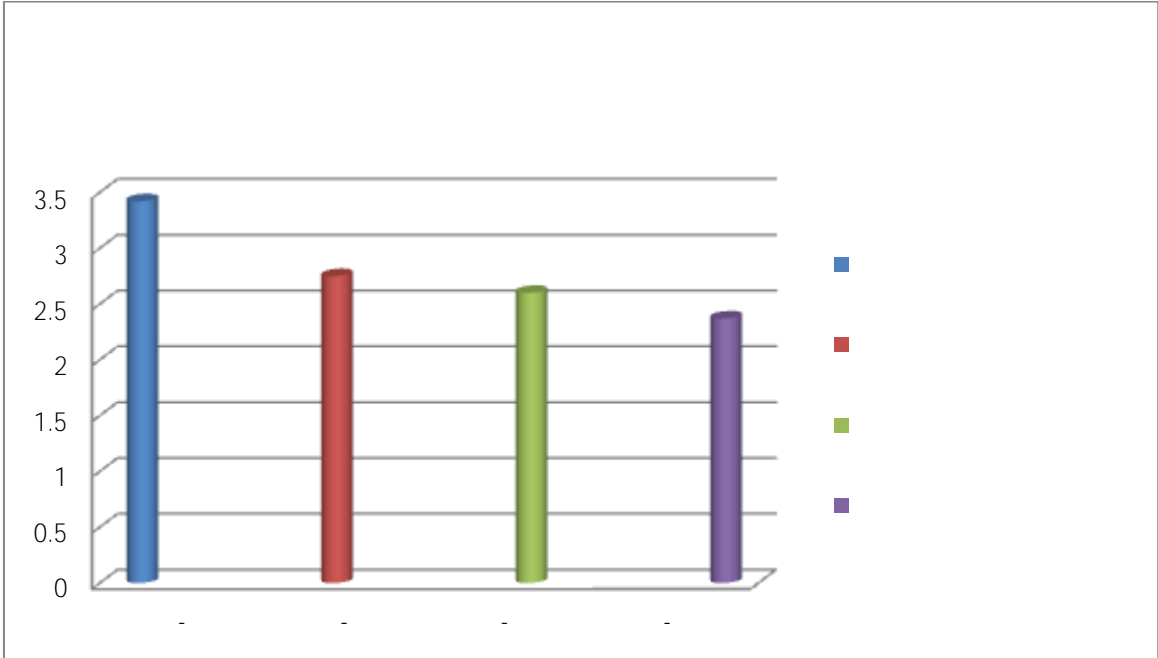
Ho,

	1,113019
	3,84
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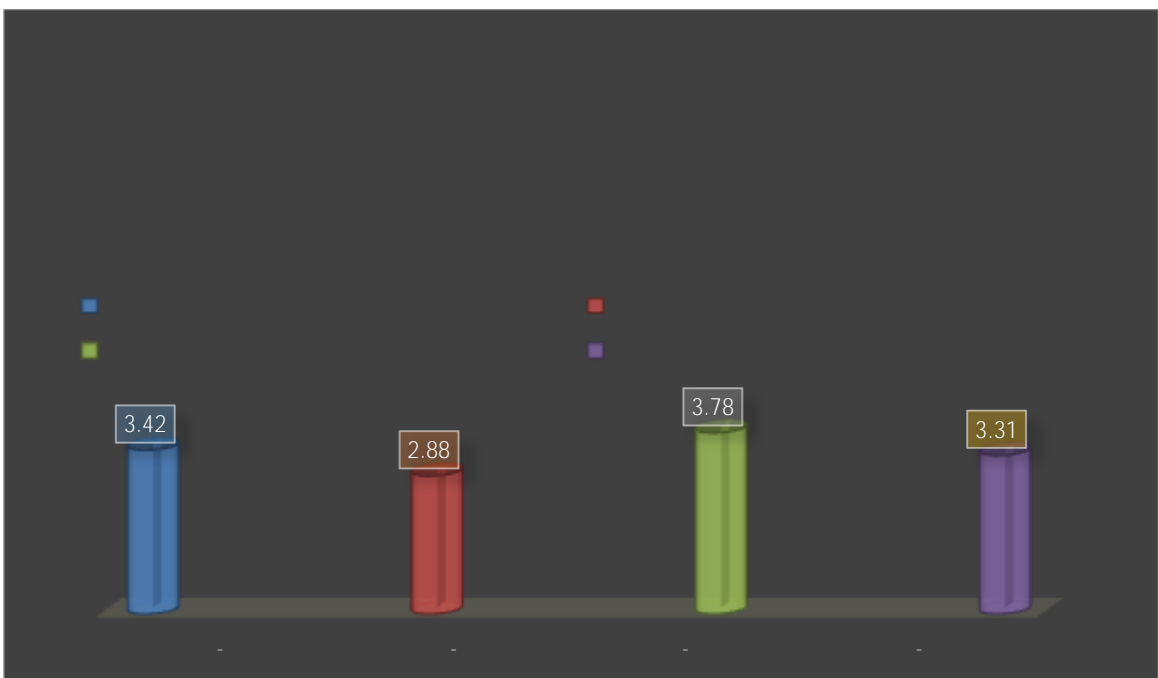


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30,

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	348	31	379
	61	5	66
	409	36	445

	/	/	/	/
( $n_i$ )	348	31	61	5
( $E_i$ )	348,339	30,661	60,661	5,339
( $n_i - E_i$ )	-0,339	0,339	0,339	-0,339
	0,115	0,115	0,115	0,115
(( $n_i - E_i$ ) <sup>2</sup> / $E_i$ )	0,000331	0,003755	0,0019	0,021565

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	0,027549
	3,84
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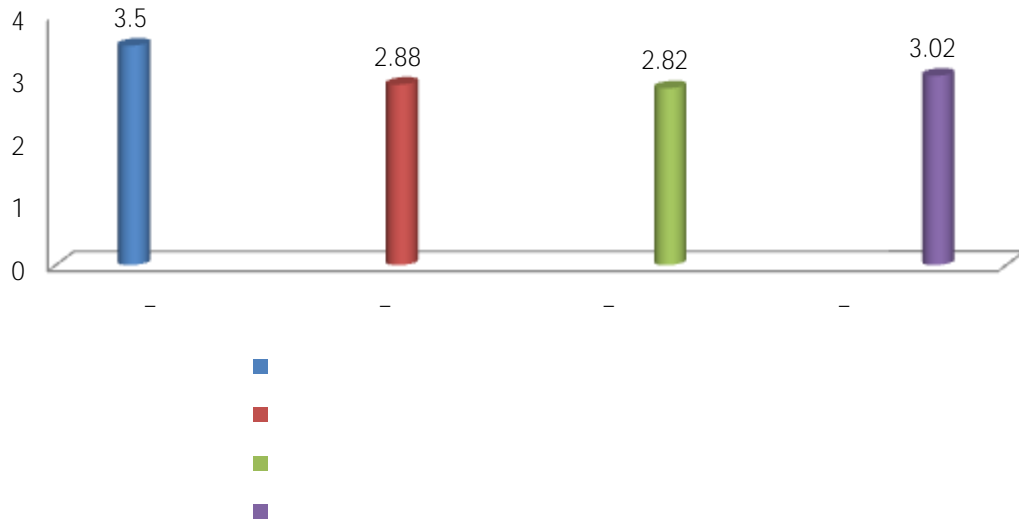
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<sup>88</sup> Harvard Business School: Coaching and Mentoring, ( , 2008, .8 )

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(coaching)<sup>90</sup> e

(coaching)<sup>91</sup>,

(coaches),

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89

<sup>90</sup> Prata Radojka: Coaching u preduzetništvo. Ljubljana: Giotta Nova, 2011, .23

<sup>91</sup> e , 2007, .222 : „“

27

12, :

3,06.

	322	30	352
	87	6	93
	409	36	445

	/ ,	, /	, /	, /
( i)	322	30	87	6
(E <sub>i</sub> )	323,524	28,476	85,476	7,524
( i-E <sub>i</sub> )	-1,524	1,524	1,524	-1,524
	2,321	2,321	2,321	2,321
(( i-E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub> )	0,007175	0,081518	0,02716	0,308542

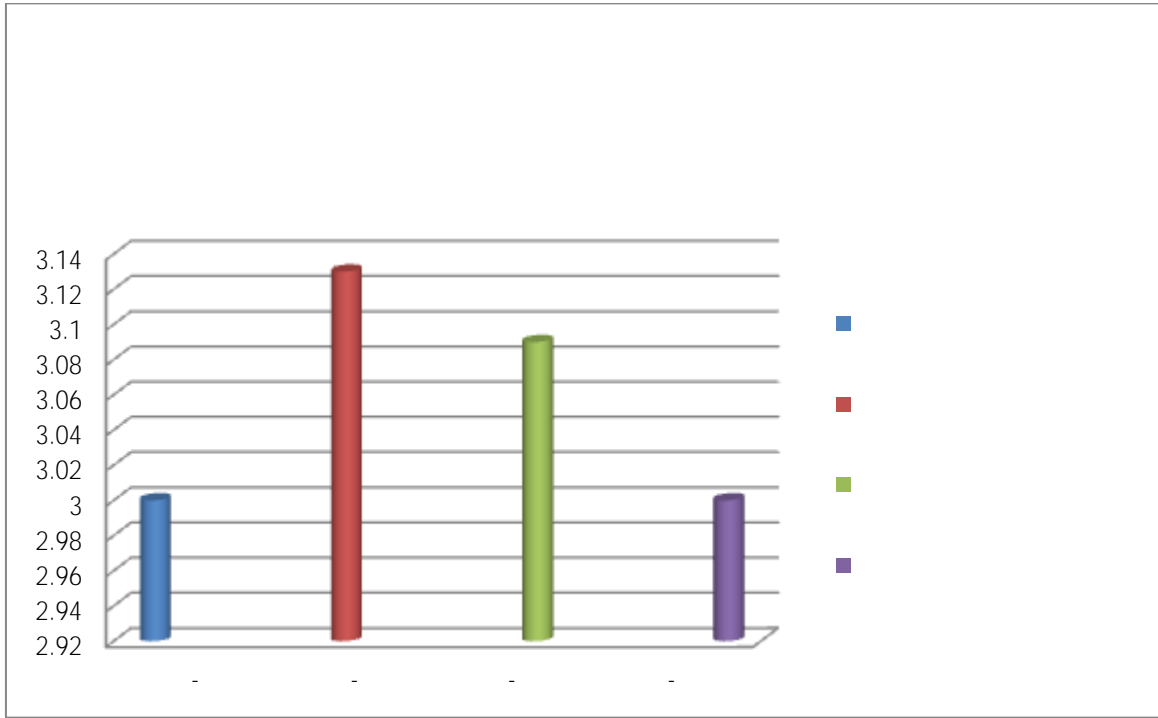
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	0,424393
	3,84
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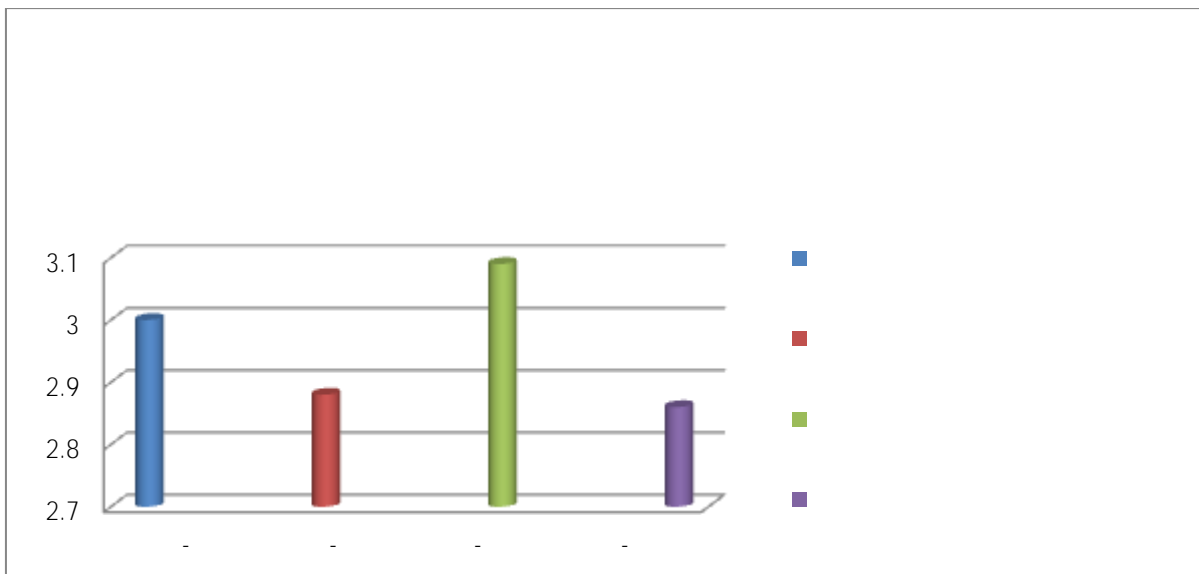


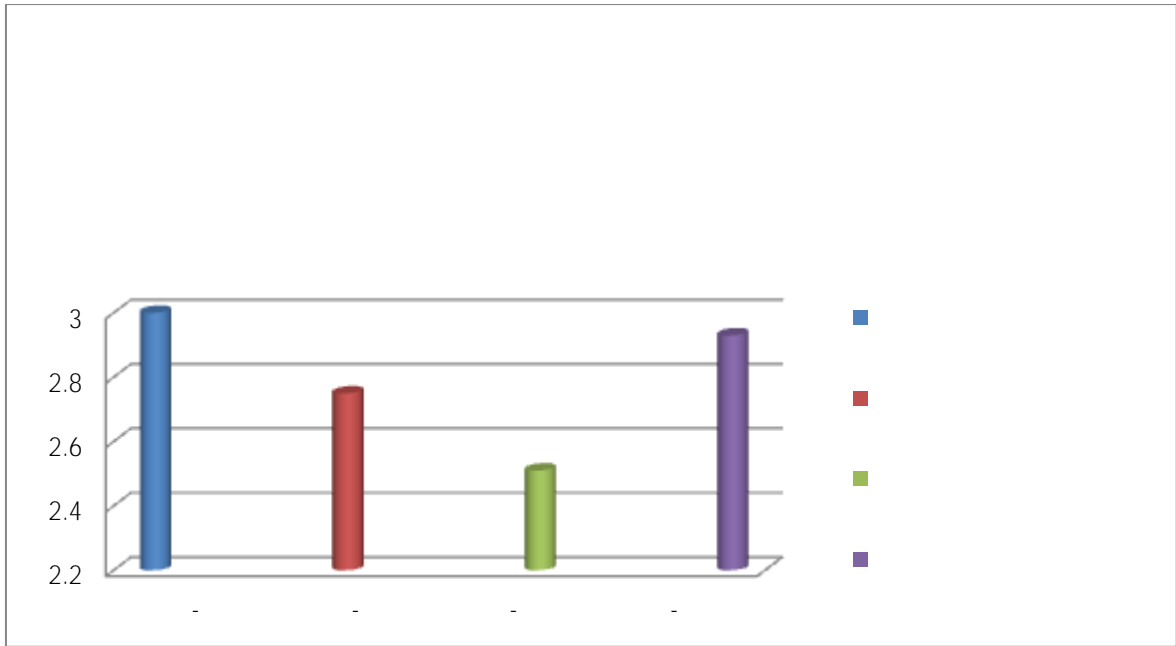
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13, :

	297	28	325
	112	8	120
	409	36	445

	/ ,	, /	, /	, /
( $i$ )	297	28	112	8
( $E_i$ )	298,708	26,292	110,292	9,708
( $i-E_i$ )	-1,708	1,708	1,708	-1,708
	2,917	2,917	2,917	2,917
(( $i-E_i$ ) <sup>2</sup> / $E_i$ )	0,009765	0,110938	0,02645	0,300458

	0,05
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	0,447607
	3,84
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14, :

	276	24	300
	133	12	145
	409	36	445

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( i)	276	24	133	12
(E <sub>i</sub> )	275,730	24,270	133,270	11,730
( i-E <sub>i</sub> )	0,270	-0,270	-0,270	0,270
	0,073	0,073	0,073	0,073
(( i-E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub> )	0,000264	0,002996	0,00055	0,006199

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Ho,

	0,010005
	3,84
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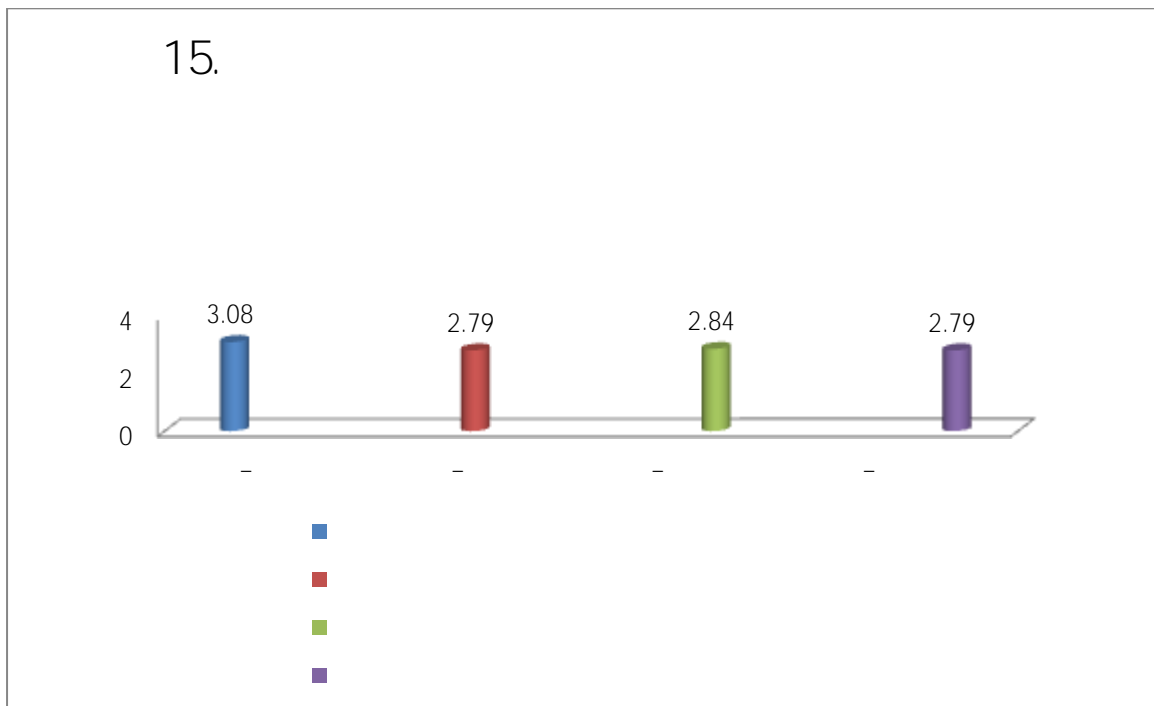
29, 31.

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2,88.

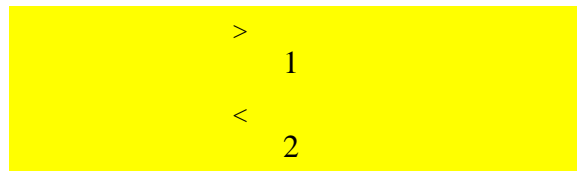
. 15, 17, 21, 22,



	278	27	305
	131	9	140
	409	36	445

	/	/	/	/
( $n_i$ )	278	27	131	9
( $E_i$ )	280,326	24,674	128,674	11,326
( $n_i - E_i$ )	-2,326	2,326	2,326	-2,326
	5,410	5,410	5,410	5,410
(( $n_i - E_i$ ) <sup>2</sup> / $E_i$ )	0,019297	0,219239	0,04204	0,477628

	0,05
	1

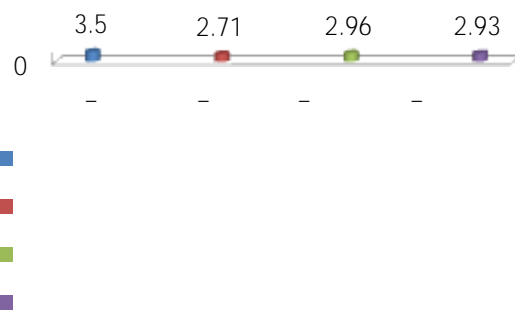


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	0,758206
	3,84
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17, :

,	291	27	318
,	118	9	127
	409	36	445

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( $i$ )	291	27	118	9
( $E_i$ )	292,274	25,726	116,726	10,274
( $i-E_i$ )	-1,274	1,274	1,274	-1,274
	1,623	1,623	1,623	1,623
(( $i-E_i$ ) <sup>2</sup> / $E_i$ )	0,005555	0,063107	0,01391	0,158016

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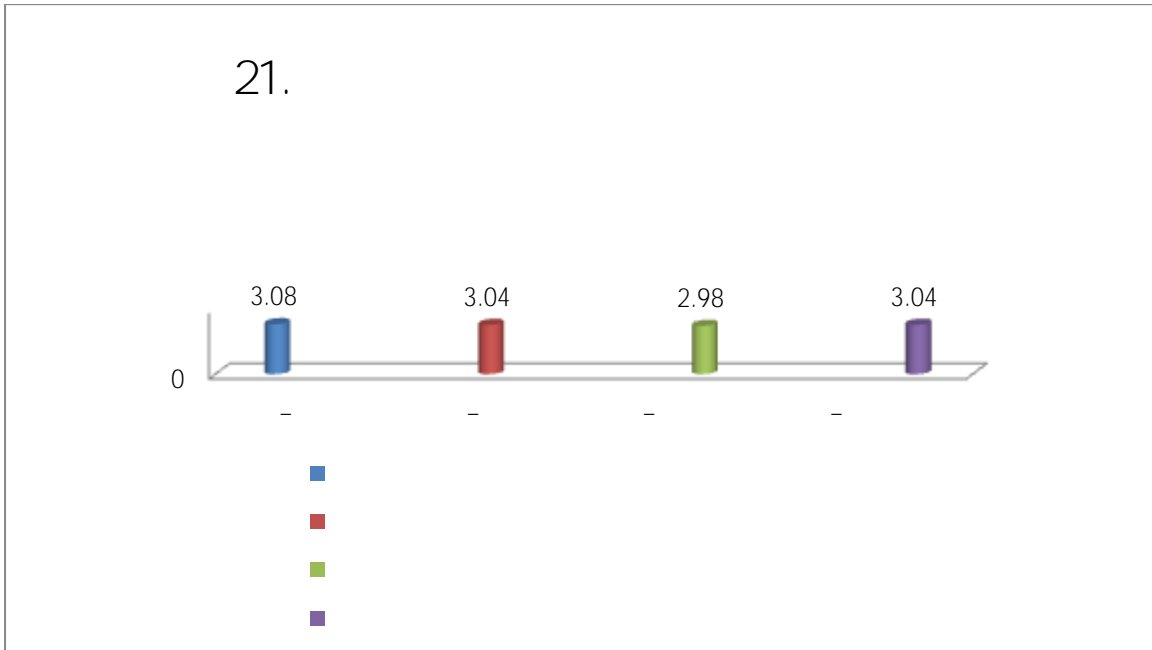
	0,240586
	3,84
	2



3.04

21: „

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	293	29	322
	116	7	123
	409	36	445

	/	/	/	/
( $x_i$ )	293	29	116	7
( $E_i$ )	295,951	26,049	113,049	9,951
( $x_i - E_i$ )	-2,951	2,951	2,951	-2,951
	8,706	8,706	8,706	8,706
(( $x_i - E_i$ ) <sup>2</sup> / $E_i$ )	0,029416	0,334204	0,07701	0,874907

	0,05
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Ho,

	1,315536
	3,84
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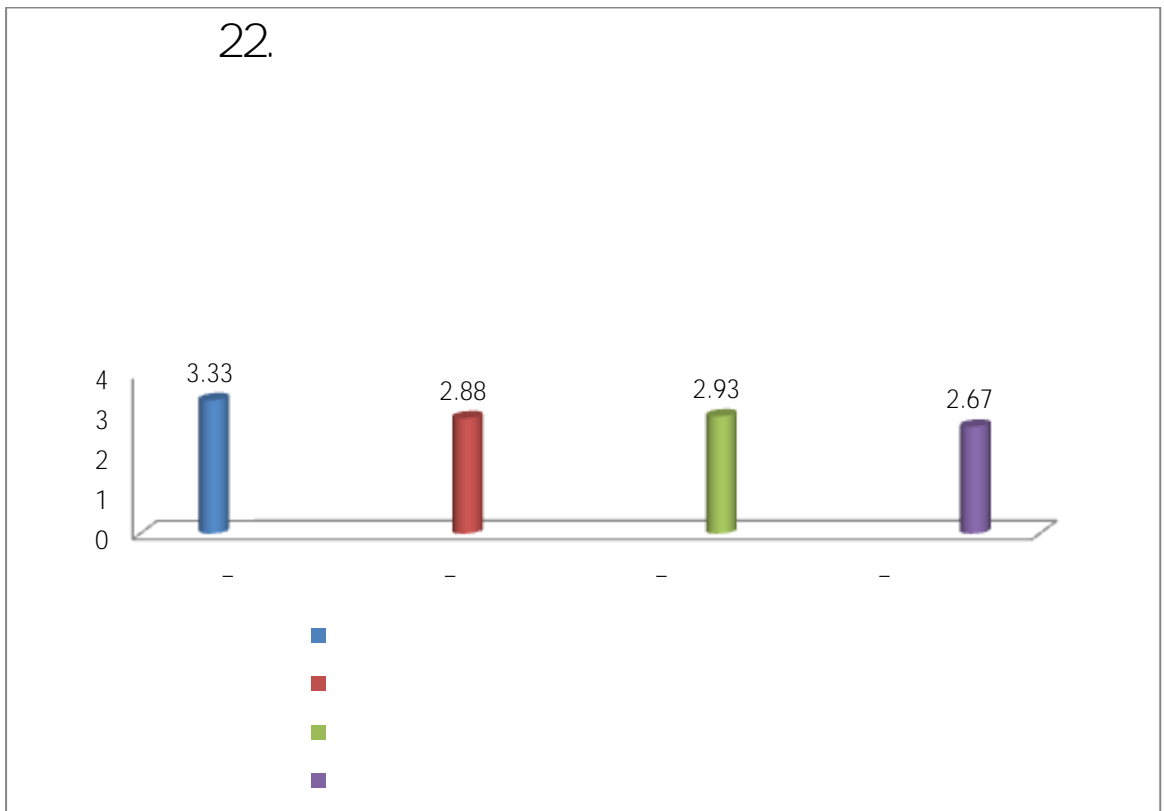


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	270	28	298
	139	8	147
	409	36	445

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( $n_i$ )	270	28	139	8
( $E_i$ )	273,892	24,108	135,108	11,892
( $n_i - E_i$ )	-3,892	3,892	3,892	-3,892
	15,149	15,149	15,149	15,149
$((n_i - E_i)^2 / E_i)$	0,055309	0,628372	0,11212	1,273843

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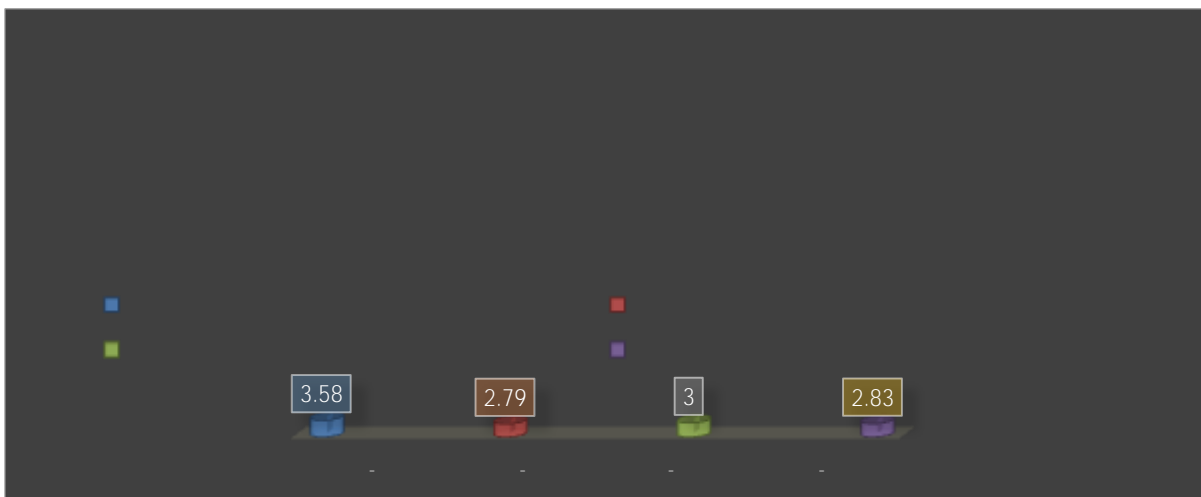
	2,069647
	3,84
	2



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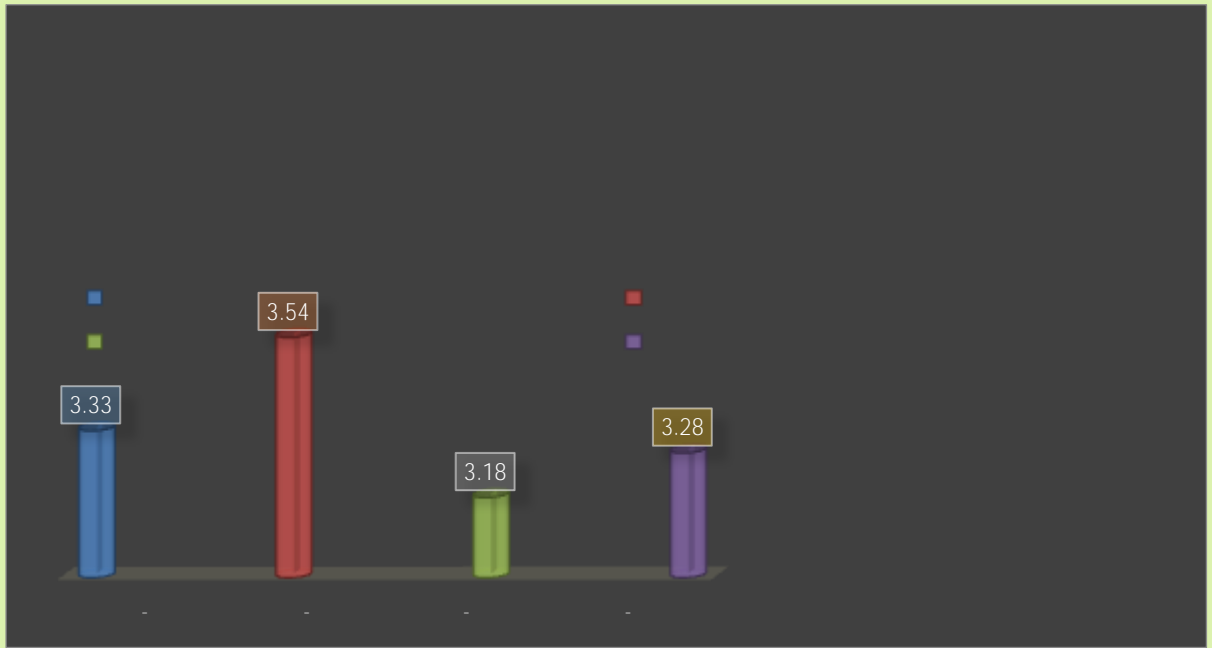
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31, :

,	351	34	385
,	58	2	60
	409	36	445

	/ ,	/	/ ,	/
( $x_i$ )	351	34	58	2
( $E_i$ )	353,854	31,146	55,146	4,854
( $x_i - E_i$ )	-2,854	2,854	2,854	-2,854
	8,145	8,145	8,145	8,145
(( $x_i - E_i$ ) <sup>2</sup> / $E_i$ )	0,023018	0,261508	0,1477	1,678007



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	2,110229
	3,84
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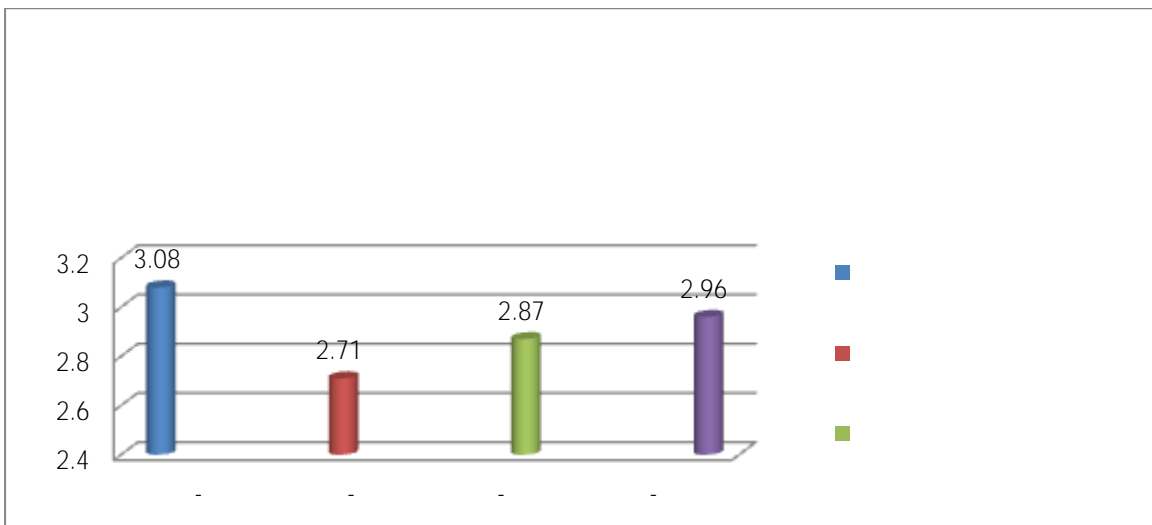
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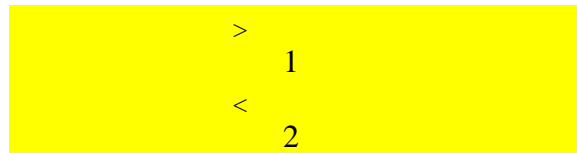
“



	300	26	326
	109	10	119
	409	36	445

$(f_i)$	300	26	109	10
$(E_i)$	299,627	26,373	109,373	9,627
$(f_i - E_i)$	0,373	-0,373	-0,373	0,373
	0,139	0,139	0,139	0,139
$((f_i - E_i)^2 / E_i)$	0,000464	0,005276	0,00127	0,014455

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Ho,

	0,021468
	3,84
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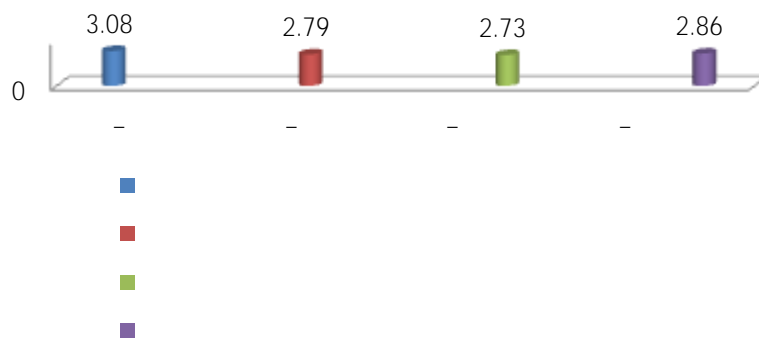


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	300	26	326
	109	10	119
	409	36	445

	/	/	/	/
( $n_i$ )	300	26	109	10
( $E_i$ )	299,627	26,373	109,373	9,627
( $n_i - E_i$ )	0,373	-0,373	-0,373	0,373
	0,139	0,139	0,139	0,139
(( $n_i - E_i$ ) <sup>2</sup> / $E_i$ )	0,000464	0,005276	0,00127	0,014455

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	0,021468
	3,84
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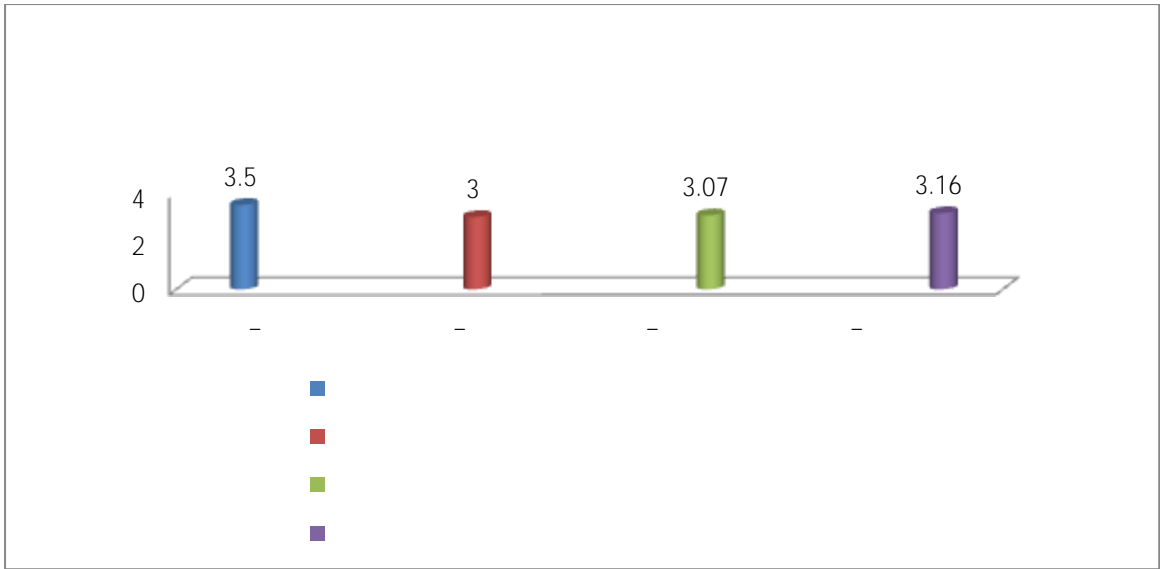


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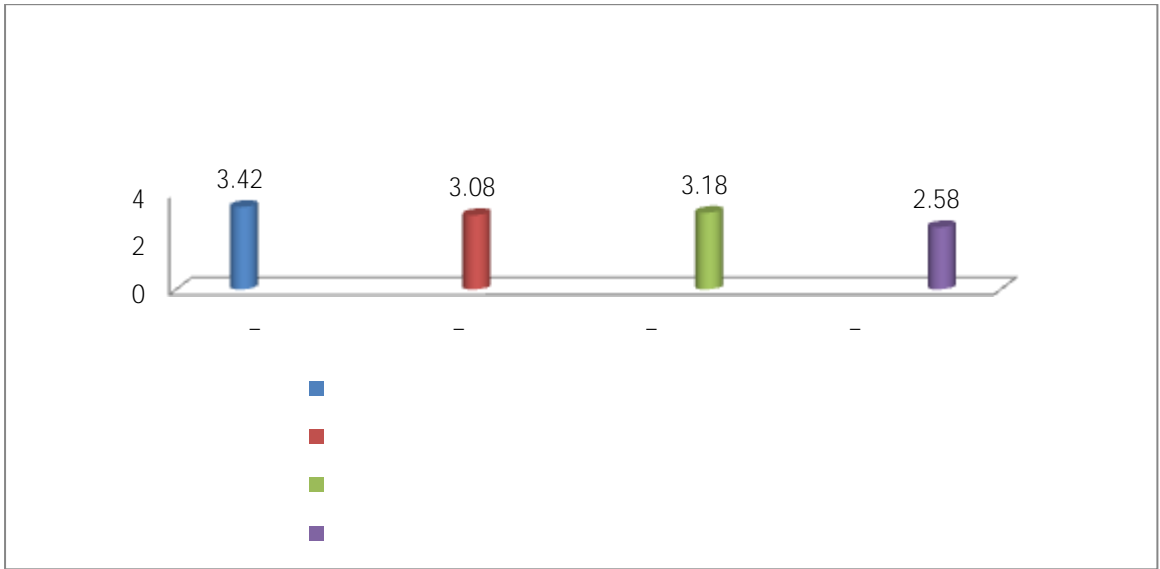
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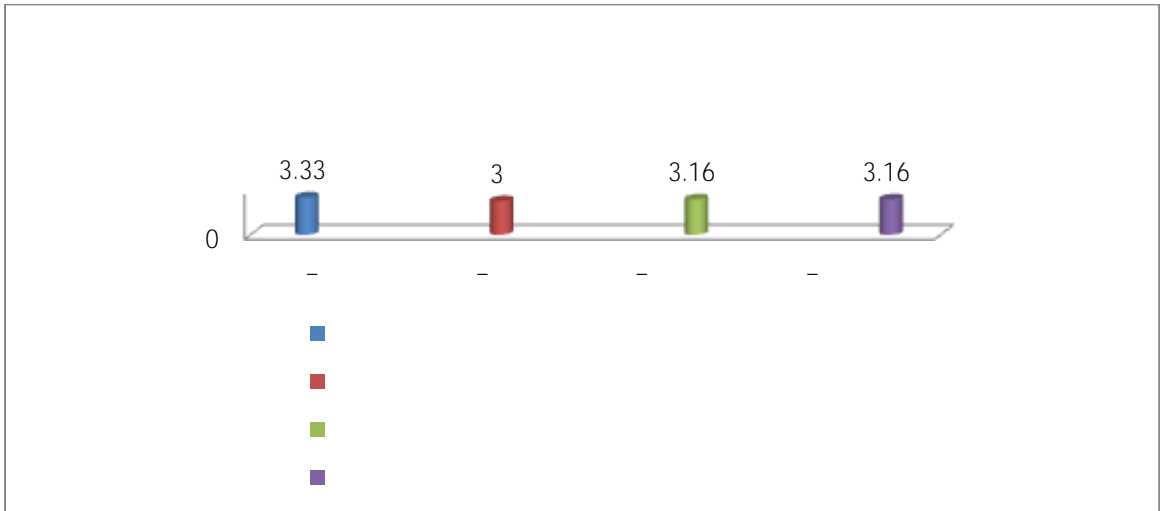
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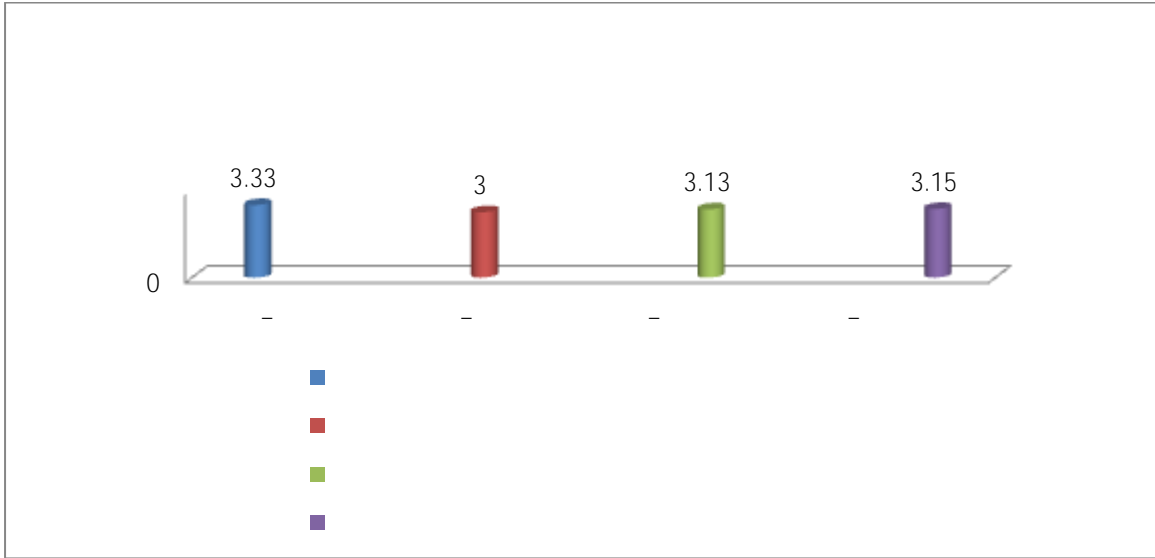
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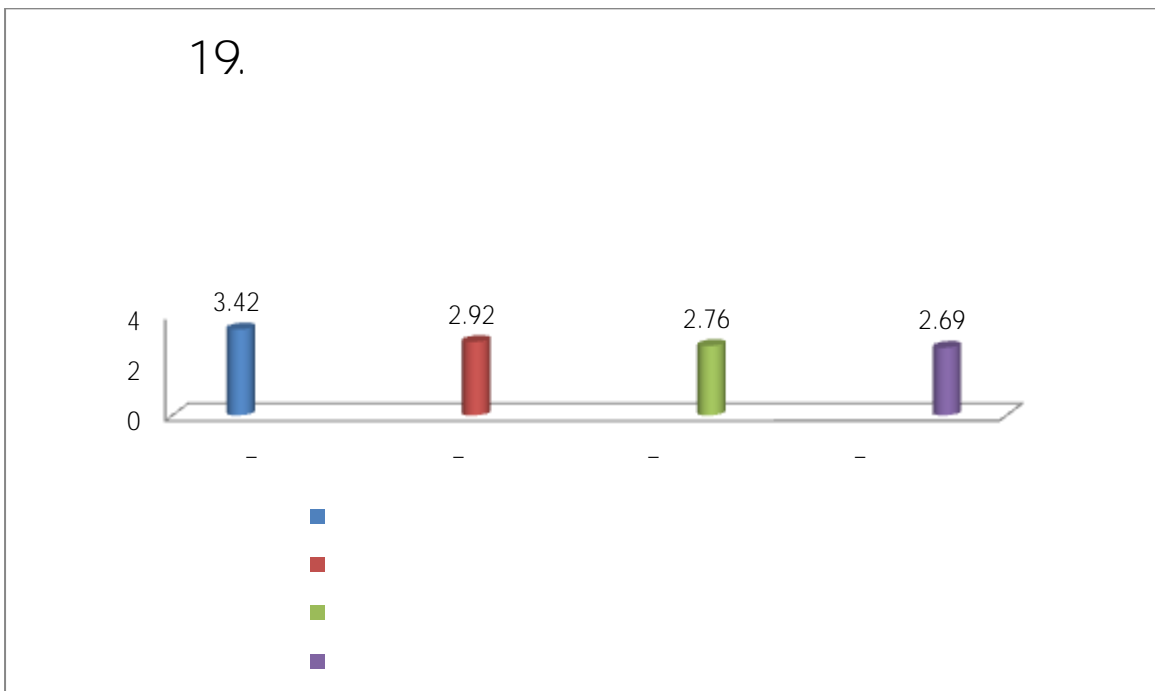


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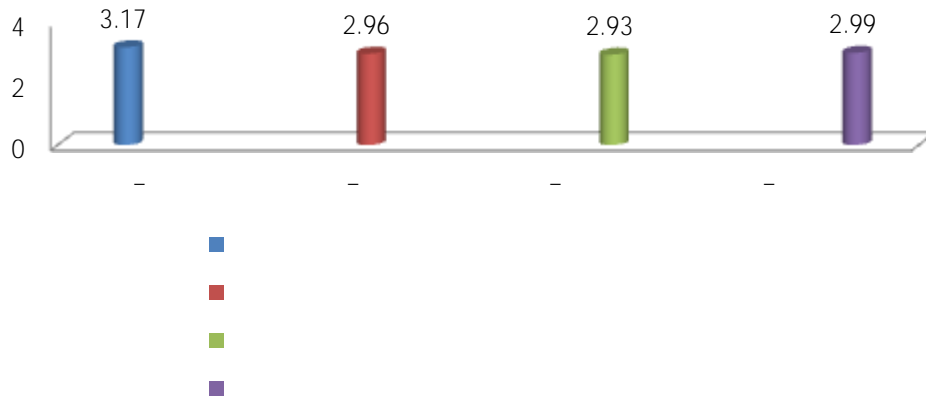


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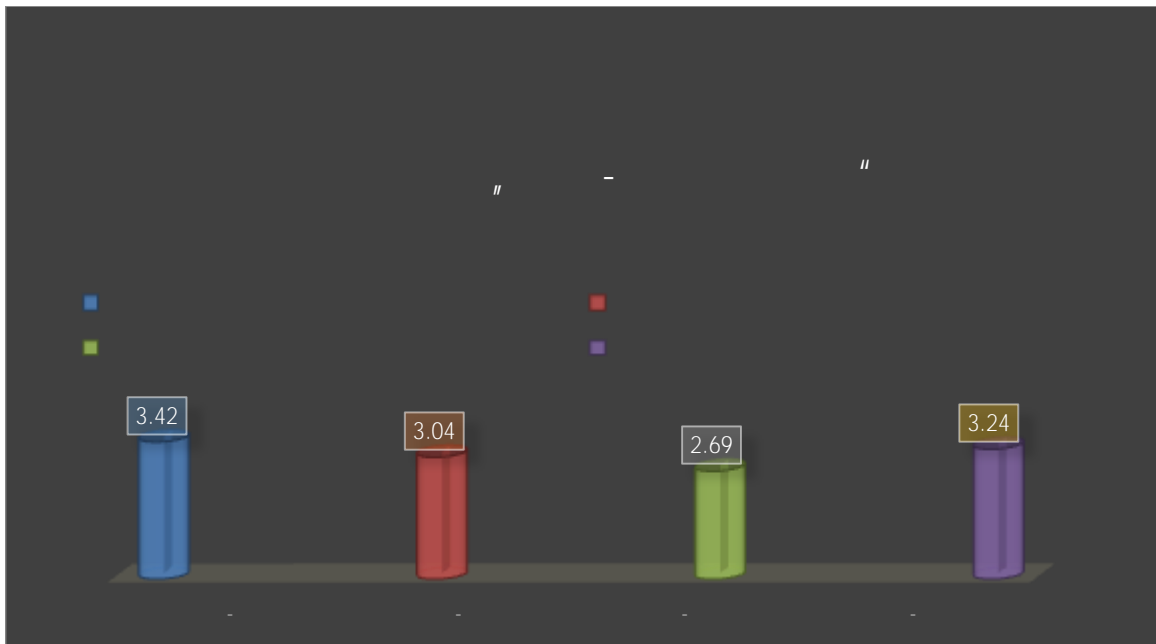
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24,

	311	28	339
	98	8	106
	409	36	445

	/	/	/	/
( $\bar{x}_i$ )	311	28	98	8
( $E_i$ )	311,575	27,425	97,425	8,575
( $\bar{x}_i - E_i$ )	-0,575	0,575	0,575	-0,575
	0,331	0,331	0,331	0,331
(( $\bar{x}_i - E_i$ ) <sup>2</sup> / $E_i$ )	0,001062	0,012068	0,0034	0,038593

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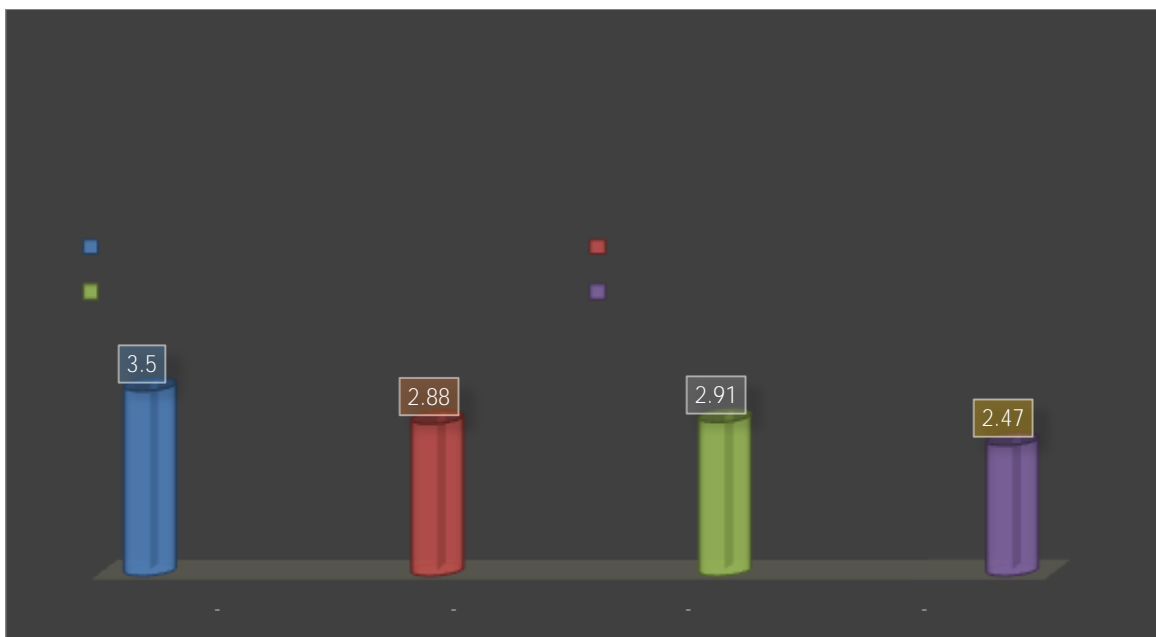
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	253	27	280
	156	9	165
	409	36	445

	/	/	/	/
( $n_i$ )	253	27	156	9
( $E_i$ )	257,348	22,652	151,652	13,348
( $n_i - E_i$ )	-4,348	4,348	4,348	-4,348
	18,908	18,908	18,908	18,908
$((n_i - E_i)^2 / E_i)$	0,073472	0,834721	0,12468	1,416496

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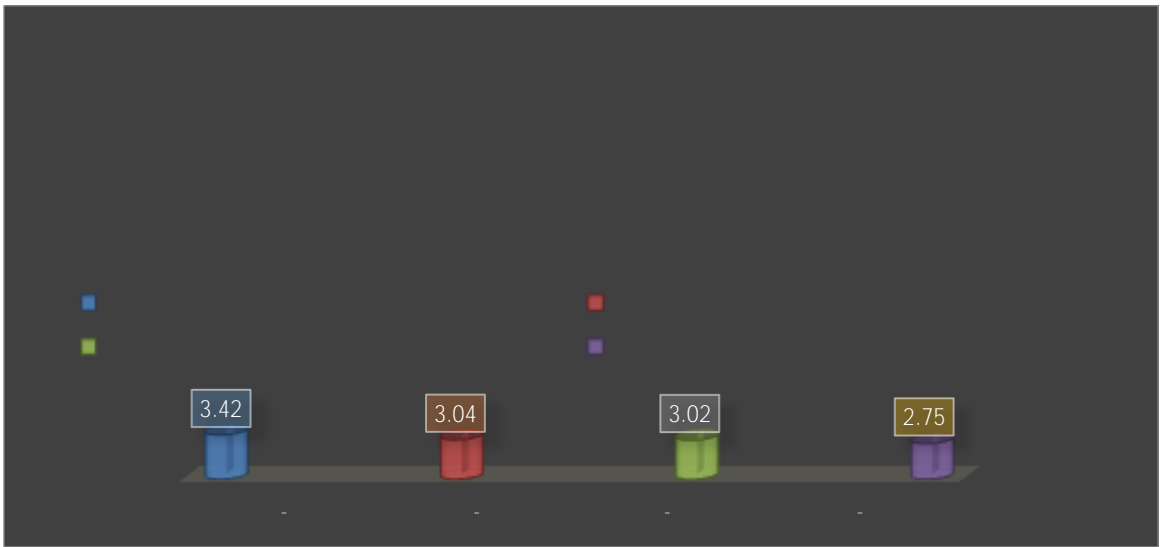
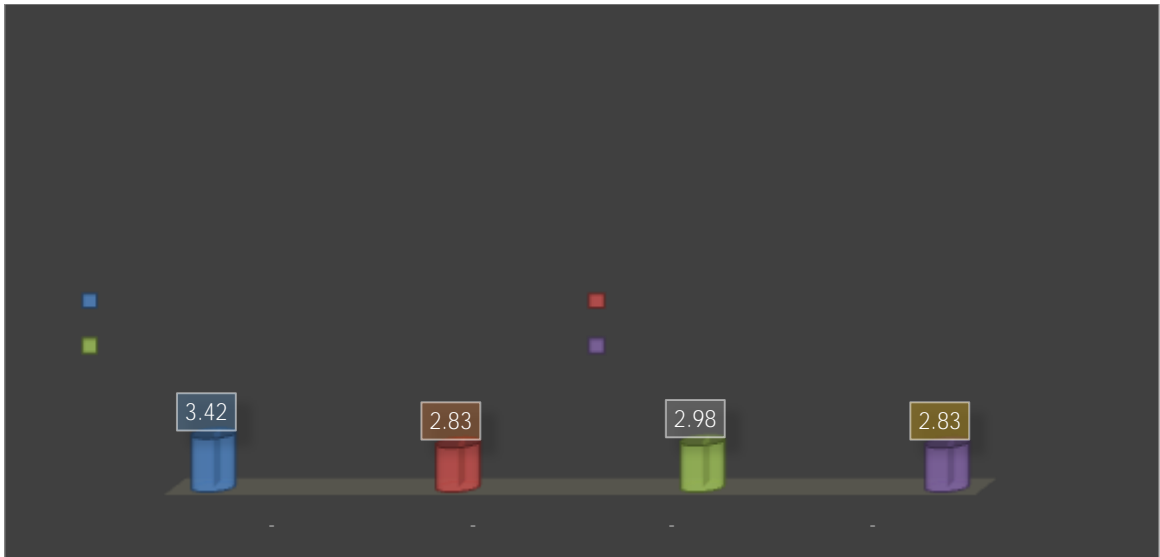
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6.2					
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6.4					
7	,				
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2:

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( )

1:

H<sub>0</sub> -

1 -  
( X<sup>2</sup> )

2 -  
( X<sup>2</sup> )

(4)	90	15	105
(3)	202	14	216
(2)	114	5	119
(1)	3	2	5
	409	36	445

,	292	29	321
,	117	7	124
	409	36	445

,	295,031	25,969	321
,	113,969	10,031	124
	409	36	445

	/	/	/	/
( )	292	29	117	7
(E <sub>i</sub> )	295,031	25,969	113,969	10,031
(O <sub>i</sub> - E <sub>i</sub> )	-3,031	3,031	3,031	-3,031
	9,190	9,190	9,190	9,190
(O <sub>i</sub> - E <sub>i</sub> ) <sup>2</sup> / E <sub>i</sub>	0,031148	0,35388	0,08063	0,916093

Excel	
( )	0,70982
	2
>	2
<	1

0,05
1

> 1  
< 2

H<sub>0</sub>

1,381756
3,84
2



2:

(4)	111	16	127
(3)	205	13	218
(2)	85	6	91
(1)	8	1	9
	409	36	445

H<sub>0</sub> -

1 -  
( X<sup>2</sup> )

2 -  
( X<sup>2</sup> )

,	316	29	345
,	93	7	100
	409	36	445

,	317,090	27,910	345
,	91,910	8,090	100
	409	36	445

	/	/	/	/
(i)	316	29	93	7
(E <sub>i</sub> )	317,090	27,910	91,910	8,090
(i-E <sub>i</sub> )	-1,090	1,090	1,090	-1,090
	1,188	1,188	1,188	1,188
(E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub>	0,003746	0,04256	0,01292	0,146832

Excel	
( )	0,9766
	2
>	2
<	1

	0,05
	1

> 1  
< 2

H<sub>0</sub>

	0,206062
	3,84
	2





3 :

(4)	90	9	99
(3)	155	16	171
(2)	95	9	104
(1)	69	2	71
	409	36	445

H<sub>0</sub> -

1 -  
( X<sup>2</sup> )

2 -  
( X<sup>2</sup> )

,	245	25	270
,	164	11	175
	409	36	445

,	248,157	21,843	270
,	160,843	14,157	175
	409	36	445

	/	/	/	/
( i )	245	25	164	11
(E <sub>i</sub> )	248,157	21,843	160,843	14,157
( i - E <sub>i</sub> )	-3,157	3,157	3,157	-3,157
	9,969	9,969	9,969	9,969
(( i - E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub> )	0,04017	0,45638	0,06198	0,704129

Excel	
( )	0,738019
↓	2
>	2
<	1

	0,05
	1

>	1
<	2

	1,262656
	3,84
	2



H<sub>0</sub>

4 :

(4)	84	7	91
(3)	169	20	189
(2)	128	7	135
(1)	28	2	30
	409	36	445

H<sub>0</sub> -

1 -  
(  $\chi^2$  )

2 -  
(  $\chi^2$  )

,	253	27	280
,	156	9	165
	409	36	445

,	257,348	22,652	280
,	151,652	13,348	165
	409	36	445

	/	/	/	/
(i)	253	27	156	9
(E <sub>i</sub> )	257,348	22,652	151,652	13,348
(i-E <sub>i</sub> )	-4,348	4,348	4,348	-4,348
	18,908	18,908	18,908	18,908
(E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub>	0,073472	0,834721	0,12468	1,416496

Excel	
( )	0,48451
	2
>	2
<	1

	0,05
	1

>	1
<	2

H<sub>0</sub>

	2,449369
	3,84
	2



5 :

(4)	64	4	68
(3)	159	15	174
(2)	138	10	148
(1)	48	7	55
	409	36	445

H<sub>0</sub> -

1 -  
(  $\chi^2$  )

2 -  
(  $\chi^2$  )

,	223	19	242
,	186	17	203
	409	36	445

,	222,422	19,578	242
,	186,578	16,422	203
	409	36	445

	/	/	/	/
(i)	223	19	186	17
(E <sub>i</sub> )	222,422	19,578	186,578	16,422
(i-E <sub>i</sub> )	0,578	-0,578	-0,578	0,578
	0,334	0,334	0,334	0,334
(E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub>	0,0015	0,017037	0,00179	0,02031

Excel	
( )	0,99785
	2
>	2
<	1

	0,05
	1

> 1  
< 2

H<sub>0</sub>

	0,040634
	3,84
	2



6.1 :

H<sub>0</sub> -

(4)	88	12	100
(3)	159	13	172
(2)	102	8	110
(1)	60	3	63
	409	36	445

1 -  
( X<sup>2</sup> )

2 -  
( X<sup>2</sup> )

,	247	25	272
,	162	11	173
	409	36	445

,	249,996	22,004	272
,	159,004	13,996	173
	409	36	445

	/	/	/	/
( i )	247	25	162	11
(E <sub>i</sub> )	249,996	22,004	159,004	13,996
( O <sub>i</sub> - E <sub>i</sub> )	-2,996	2,996	2,996	-2,996
	8,973	8,973	8,973	8,973
( (O <sub>i</sub> - E <sub>i</sub> ) <sup>2</sup> / E <sub>i</sub> )	0,035893	0,407783	0,05643	0,641138

Excel	
( )	0,76713
	2
>	2
<	1

	0,05
	1

> 1  
< 2

H<sub>0</sub>

	1,141247
	3,84
	2



6.2 :

H<sub>0</sub> -

(4)	74	11	85
(3)	163	14	177
(2)	110	8	118
(1)	62	3	65
	409	36	445

1 -  
( X<sup>2</sup> )

2 -  
( X<sup>2</sup> )

,	237	25	262
,	172	11	183
	409	36	445

,	240,804	21,196	262
,	168,196	14,804	183
	409	36	445

	/	/	/	/
( )	237	25	172	11
(E <sub>i</sub> )	240,804	21,196	168,196	14,804
(i-E <sub>i</sub> )	-3,804	3,804	3,804	-3,804
	14,474	14,474	14,474	14,474
(E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub>	0,060108	0,682889	0,08606	0,977688

Excel	
( )	0,61347
	2
>	2
<	1

	0,05
	1

> 1  
< 2

H<sub>0</sub>

	1,80674
	3,84
	2



6.3 :

(4)	74	9	83
(3)	155	15	170
(2)	113	8	121
(1)	69	4	73
	411	36	447

,	229	24	253
,	182	12	194
	411	36	447

(i)	229	24	182	12
(E <sub>i</sub> )	232,624	20,376	178,376	15,624
(O <sub>i</sub> -E <sub>i</sub> )	-3,624	3,624	3,624	-3,624
	13,135	13,135	13,135	13,135
$\frac{(O_i - E_i)^2}{E_i}$	0,056463	0,644614	0,07363	0,840656

	0,05
	1

	1,615366
	3,84
	2



>	1
<	2

H<sub>0</sub>

H<sub>0</sub> -

1 -  
(  $\chi^2$  )

2 -  
(  $\chi^2$  )

,	232,624	20,376	253
,	178,376	15,624	194
	411	36	447

Excel	
( )	0,65591
	2
>	2
<	1

6.4 :

H<sub>0</sub> -

(4)	78	10	<b>88</b>
(3)	170	17	<b>187</b>
(2)	111	6	<b>117</b>
(1)	50	3	<b>53</b>
	<b>409</b>	<b>36</b>	<b>445</b>

1 -  
(  $\chi^2$  )

2 -  
(  $\chi^2$  )

,	248	27	<b>275</b>
,	161	9	<b>170</b>
	<b>409</b>	<b>36</b>	<b>445</b>

,	252,753	22,247	<b>275</b>
,	156,247	13,753	<b>170</b>
	<b>409</b>	<b>36</b>	<b>445</b>

	/	/	/	/
( i )	248	27	161	9
(E <sub>i</sub> )	252,753	22,247	156,247	13,753
( i - E <sub>i</sub> )	-4,753	4,753	4,753	-4,753
	22,589	22,589	22,589	22,589
(E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub> )	0,089373	1,015373	0,14457	1,642515

Excel	
( )	<b>0,4086</b>
	<b>2</b>
>	2
<	1

<b>0,05</b>
<b>1</b>

> 1  
< 2

H<sub>0</sub>

<b>2,891834</b>
<b>3,84</b>
<b>2</b>



7.1 :

(4)	73	12	85
(3)	162	13	175
(2)	116	9	125
(1)	58	2	60
	409	36	445

H<sub>0</sub> -

1 -  
(  $\chi^2$  )

2 -  
(  $\chi^2$  )

,	235	25	260
,	174	11	185
	409	36	445

,	238,966	21,034	260
,	170,034	14,966	185
	409	36	445

	/	/	/	/
( i )	235	25	174	11
(E <sub>i</sub> )	238,966	21,034	170,034	14,966
( O <sub>i</sub> - E <sub>i</sub> )	-3,966	3,966	3,966	-3,966
	15,731	15,731	15,731	15,731
(E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub> )	0,065831	0,747917	0,09252	1,051127

Excel	
( )	0,5813
↓	2
>	2
<	1

	0,05
	1

> 1  
< 2

H<sub>0</sub>

	1,957395
	3,84
	2





7.2 :

(4)	84	11	95
(3)	182	15	197
(2)	99	8	107
(1)	46	2	48
	411	36	447

,	266	26	292
,	145	10	155
	411	36	447

	/	/	/	/
(i)	266	26	145	10
(E <sub>i</sub> )	268,483	23,517	142,517	12,483
(i - E <sub>i</sub> )	-2,483	2,483	2,483	-2,483
	6,166	6,166	6,166	6,166
(E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub>	0,022968	0,262212	0,04327	0,493974

	0,05
	1

	0,822422
	3,84
	2



>	1
<	2

H<sub>0</sub>

H<sub>0</sub> -

1 -  
( X<sup>2</sup> )

2 -  
( X<sup>2</sup> )

,	268,483	23,517	292
,	142,517	12,483	155
	411	36	447

Excel	
( )	0,8441
	2

>	2
<	1

7.3 :

(4)	86	11	97
(3)	178	16	194
(2)	88	7	95
(1)	57	2	59
	409	36	445

H<sub>0</sub> -

1 -  
(  $\chi^2$  )

2 -  
(  $\chi^2$  )

,	264	27	291
,	145	9	154
	409	36	445

,	267,458	23,542	291
,	141,542	12,458	154
	409	36	445

( )	264	27	145	9
(E <sub>i</sub> )	267,458	23,542	141,542	12,458
( $O_i - E_i$ )	-3,458	3,458	3,458	-3,458
	11,961	11,961	11,961	11,961
$(O_i - E_i)^2 / E_i$	0,04472	0,508068	0,0845	0,96005

Excel	
( )	0,65999
	2
>	2
<	1

	0,05
	1

> 1  
< 2

H<sub>0</sub>

	1,597341
	3,84
	2



7.4 :

(4)	97	13	<b>110</b>
(3)	169	12	<b>181</b>
(2)	89	8	<b>97</b>
(1)	54	3	<b>57</b>
	<b>409</b>	<b>36</b>	<b>445</b>

H<sub>0</sub> -

1 -  
(  $\chi^2$  )

2 -  
(  $\chi^2$  )

,	266	25	<b>291</b>
,	143	11	<b>154</b>
	<b>409</b>	<b>36</b>	<b>445</b>

,	267,458	23,542	<b>291</b>
,	141,542	12,458	<b>154</b>
	<b>409</b>	<b>36</b>	<b>445</b>

	/	/	/	/
( )	266	25	143	11
(E <sub>i</sub> )	267,458	23,542	141,542	12,458
( - E <sub>i</sub> )	-1,458	1,458	1,458	-1,458
	2,127	2,127	2,127	2,127
E <sub>i</sub> <sup>2</sup> /E <sub>i</sub> )	0,007953	0,090351	0,01503	0,170729

Excel	
( )	<b>0,963</b>
	<b>2</b>
>	2
<	1

	<b>0,05</b>
	<b>1</b>

> 1  
< 2

H<sub>0</sub>

	<b>0,28406</b>
	<b>3,84</b>
	<b>2</b>



8 :

(4)	86	12	98
(3)	171	18	189
(2)	118	6	124
(1)	34	0	34
	409	36	445

H<sub>0</sub> -

1 -  
(  $\chi^2$  )

2 -  
(  $\chi^2$  )

,	257	30	287
,	152	6	158
	409	36	445

,	263,782	23,218	287
,	145,218	12,782	158
	409	36	445

	/	/	/	/
(i)	257	30	152	6
(E <sub>i</sub> )	263,782	23,218	145,218	12,782
(i-E <sub>i</sub> )	-6,782	6,782	6,782	-6,782
	45,996	45,996	45,996	45,996
(E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub>	0,174371	1,981044	0,31674	3,598478

Excel	
( )	0,10822
	2
>	2
<	1

	0,05
	1

> 1  
< 2

H<sub>0</sub>

	6,070629
	3,84
	2



9.1 :

(4)	160	15	175
(3)	177	14	191
(2)	70	5	75
(1)	18	2	20
	425	36	461

,	337	29	366
,	88	7	95
	425	36	461

	/	/	/	/
(i)	337	29	88	7
(E <sub>i</sub> )	337,419	28,581	87,581	7,419
(i - E <sub>i</sub> )	-0,419	0,419	0,419	-0,419
	0,175	0,175	0,175	0,175
(E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub>	0,000519	0,006132	0,002	0,023626

	0,05
	1

	0,032279
	3,84
	2



>	1
<	2

H<sub>0</sub>

H<sub>0</sub> -

1 -  
( X<sup>2</sup> )

2 -  
( X<sup>2</sup> )

,	337,419	28,581	366
,	87,581	7,419	95
	425	36	461

Excel	
( )	0,99847
	2
>	2
<	1

9.2 :

(4)	75	13	<b>88</b>
(3)	163	12	<b>175</b>
(2)	110	8	<b>118</b>
(1)	58	3	<b>61</b>
	<b>406</b>	<b>36</b>	<b>442</b>

,	238	25	<b>263</b>
,	168	11	<b>179</b>
	<b>406</b>	<b>36</b>	<b>442</b>

	/	/	/	/
(i)	238	25	168	11
(E <sub>i</sub> )	241,579	21,421	164,421	14,579
(O <sub>i</sub> - E <sub>i</sub> )	-3,579	3,579	3,579	-3,579
	12,811	12,811	12,811	12,811
(O <sub>i</sub> - E <sub>i</sub> ) <sup>2</sup> / E <sub>i</sub>	0,053028	0,598043	0,07791	0,878689

	<b>0,05</b>
	<b>1</b>

	<b>1,607674</b>
	<b>3,84</b>
	<b>2</b>



>	1
<	2

H<sub>0</sub>

H<sub>0</sub> -

1 -  
( X<sup>2</sup> )

2 -  
( X<sup>2</sup> )

,	241,579	21,421	<b>263</b>
,	164,421	14,579	<b>179</b>
	<b>406</b>	<b>36</b>	<b>442</b>

Excel	
( )	<b>0,65765</b>
↓	<b>2</b>
>	2
<	1

9.3 :

(4)	99	16	115
(3)	200	13	213
(2)	82	6	88
(1)	28	1	29
	409	36	445

,	299	29	328
,	110	7	117
	409	36	445

	/	/	/	/
(i)	299	29	110	7
(E <sub>i</sub> )	301,465	26,535	107,535	9,465
(O <sub>i</sub> - E <sub>i</sub> )	-2,465	2,465	2,465	-2,465
	6,077	6,077	6,077	6,077
(O <sub>i</sub> - E <sub>i</sub> ) <sup>2</sup> / E <sub>i</sub>	0,020158	0,229022	0,05651	0,642044

	0,05
	1

	0,947737
	3,84
	2



>	1
<	2

H<sub>0</sub>

H<sub>0</sub> -

1 -  
(  $\chi^2$  )

2 -  
(  $\chi^2$  )

,	301,465	26,535	328
,	107,535	9,465	117
	409	36	445

Excel	
( )	0,8139
	2

>	2
<	1

9.4 :

(

)

H<sub>0</sub> -

(4)	154	18	<b>172</b>
(3)	165	13	<b>178</b>
(2)	80	4	<b>84</b>
(1)	26	1	<b>27</b>
	<b>425</b>	<b>36</b>	<b>461</b>

1 -  
(  $\chi^2$  )

2 -  
(  $\chi^2$  )

,	319	31	<b>350</b>
,	106	5	<b>111</b>
	<b>425</b>	<b>36</b>	<b>461</b>

,	322,668	27,332	<b>350</b>
,	102,332	8,668	<b>111</b>
	<b>425</b>	<b>36</b>	<b>461</b>

	/	/	/	/
( )	319	31	106	5
(E <sub>i</sub> )	322,668	27,332	102,332	8,668
(O <sub>i</sub> - E <sub>i</sub> )	-3,668	3,668	3,668	-3,668
	13,455	13,455	13,455	13,455
(E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub> )	0,041699	0,492284	0,13148	1,552247

Excel	
( )	<b>0,52847</b>
	<b>2</b>
>	2
<	1

	<b>0,05</b>
	<b>1</b>

> 1  
< 2

H<sub>0</sub>

	<b>2,217715</b>
	<b>3,84</b>
	<b>2</b>





9.5 :

(4)	132	18	150
(3)	192	14	206
(2)	68	4	72
(1)	17	1	18
	409	37	446

H<sub>0</sub> -

1 -  
( X<sup>2</sup> )

2 -  
( X<sup>2</sup> )

,	324	32	356
,	85	5	90
	409	37	446

,	326,466	29,534	356
,	82,534	7,466	90
	409	37	446

	/	/	/	/
( )	324	32	85	5
(E <sub>i</sub> )	326,466	29,534	82,534	7,466
( O <sub>i</sub> - E <sub>i</sub> )	-2,466	2,466	2,466	-2,466
	6,083	6,083	6,083	6,083
(E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub>	0,018633	0,205968	0,0737	0,814716

Excel	
( )	0,77393
	2
>	2
<	1

	0,05
	1

> 1  
< 2

H<sub>0</sub>

	1,113019
	3,84
	2



9.6 :

(4)	100	15	115
(3)	184	13	197
(2)	96	3	99
(1)	29	1	30
	409	32	441

H<sub>0</sub> -

1 -  
(  $\chi^2$  )

2 -  
(  $\chi^2$  )

,	284	28	312
,	125	4	129
	409	32	441

,	289,361	22,639	312
,	119,639	9,361	129
	409	32	441

	/	/	/	/
(i)	284	28	125	4
(E <sub>i</sub> )	289,361	22,639	119,639	9,361
(i-E <sub>i</sub> )	-5,361	5,361	5,361	-5,361
	28,735	28,735	28,735	28,735
E <sub>i</sub> <sup>2</sup> /E <sub>i</sub>	0,099307	1,269263	0,24018	3,069847

Excel	
( )	0,1969
	2
>	2
<	1

	0,05
	1

> 1  
< 2

H<sub>0</sub>

	4,6786
	3,84
	2



10 :

(4)	50	12	62
(3)	139	15	154
(2)	164	6	170
(1)	56	3	59
	409	36	445

H<sub>0</sub> -

1 -  
( X<sup>2</sup> )

2 -  
( X<sup>2</sup> )

,	189	27	216
,	220	9	229
	409	36	445

,	198,526	17,474	216
,	210,474	18,526	229
	409	36	445

	/	/	/	/
( )	189	27	220	9
(E <sub>i</sub> )	198,526	17,474	210,474	18,526
(O <sub>i</sub> - E <sub>i</sub> )	-9,526	9,526	9,526	-9,526
	90,742	90,742	90,742	90,742
(O <sub>i</sub> - E <sub>i</sub> ) <sup>2</sup> / E <sub>i</sub>	0,457077	5,192907	0,43113	4,898113

Excel	
( )	0,01184
	2
>	2
<	1

	0,05
	1

> 1  
< 2

H<sub>0</sub>

	10,97923
	3,84
	2



11 :

(4)	95	7	102
(3)	205	19	224
(2)	94	8	102
(1)	15	2	17
	409	36	445

H<sub>0</sub> -

1 -  
( X<sup>2</sup> )

2 -  
( X<sup>2</sup> )

,	300	26	326
,	109	10	119
	409	36	445

,	299,627	26,373	326
,	109,373	9,627	119
	409	36	445

	/	/	/	/
( i )	300	26	109	10
(E <sub>i</sub> )	299,627	26,373	109,373	9,627
( i - E <sub>i</sub> )	0,373	-0,373	-0,373	0,373
	0,139	0,139	0,139	0,139
(E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub> )	0,000464	0,005276	0,00127	0,014455

Excel	
( )	0,99917
	2
>	2
<	1

	0,05
	1

>	1
<	2

H<sub>0</sub>

	0,021468
	3,84
	2



12 :

(4)	118	11	<b>129</b>
(3)	204	19	<b>223</b>
(2)	68	4	<b>72</b>
(1)	19	2	<b>21</b>
	<b>409</b>	<b>36</b>	<b>445</b>

H<sub>0</sub> -

1 -  
( X<sup>2</sup> )

2 -  
( X<sup>2</sup> )

,	322	30	<b>352</b>
,	87	6	<b>93</b>
	<b>409</b>	<b>36</b>	<b>445</b>

,	323,524	28,476	<b>352</b>
,	85,476	7,524	<b>93</b>
	<b>409</b>	<b>36</b>	<b>445</b>

	/	/	/	/
( )	322	30	87	6
(E <sub>i</sub> )	323,524	28,476	85,476	7,524
( - E <sub>i</sub> )	-1,524	1,524	1,524	-1,524
	2,321	2,321	2,321	2,321
(E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub> )	0,007175	0,081518	0,02716	0,308542

Excel	
( )	<b>0,93516</b>
	<b>2</b>
>	2
<	1

	<b>0,05</b>
	<b>1</b>

>	1
<	2

H<sub>0</sub>

	<b>0,424393</b>
	<b>3,84</b>
	<b>2</b>



13 :

(4)	118	7	125
(3)	179	21	200
(2)	79	6	85
(1)	33	2	35
	409	36	445

H<sub>0</sub> -

1 -  
( X<sup>2</sup> )

2 -  
( X<sup>2</sup> )

,	297	28	325
,	112	8	120
	409	36	445

,	298,708	26,292	325
,	110,292	9,708	120
	409	36	445

	/	/	/	/
( )	297	28	112	8
(E <sub>i</sub> )	298,708	26,292	110,292	9,708
(O <sub>i</sub> - E <sub>i</sub> )	-1,708	1,708	1,708	-1,708
	2,917	2,917	2,917	2,917
(O <sub>i</sub> - E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub>	0,009765	0,110938	0,02645	0,300458

Excel	
( )	0,93024
	2
>	2
<	1

	0,05
	1

> 1  
< 2

H<sub>0</sub>

	0,447607
	3,84
	2



14 :

(4)	75	9	84
(3)	201	15	216
(2)	107	9	116
(1)	26	3	29
	409	36	445

H<sub>0</sub> -

1 -  
(  $\chi^2$  )

2 -  
(  $\chi^2$  )

,	276	24	300
,	133	12	145
	409	36	445

,	275,730	24,270	300
,	133,270	11,730	145
	409	36	445

	/	/	/	/
( i )	276	24	133	12
(E <sub>i</sub> )	275,730	24,270	133,270	11,730
( i - E <sub>i</sub> )	0,270	-0,270	-0,270	0,270
	0,073	0,073	0,073	0,073
(E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub> )	0,000264	0,002996	0,00055	0,006199

Excel	
( )	0,99973
	2
>	2
<	1

	0,05
	1

> 1  
< 2

H<sub>0</sub>

	0,010005
	3,84
	2



15 :

(4)	72	9	81
(3)	206	18	224
(2)	112	6	118
(1)	19	3	22
	409	36	445

H<sub>0</sub> -

1 -  
( X<sup>2</sup> )

2 -  
( X<sup>2</sup> )

,	278	27	305
,	131	9	140
	409	36	445

,	280,326	24,674	305
,	128,674	11,326	140
	409	36	445

	/	/	/	/
( i )	278	27	131	9
(E <sub>i</sub> )	280,326	24,674	128,674	11,326
( i - E <sub>i</sub> )	-2,326	2,326	2,326	-2,326
	5,410	5,410	5,410	5,410
(E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub>	0,019297	0,219239	0,04204	0,477628

Excel	
( )	0,85944
	2
>	2
<	1

	0,05
	1

> 1  
< 2

H<sub>0</sub>

	0,758206
	3,84
	2





16 :

(4)	76	11	87
(3)	202	15	217
(2)	111	5	116
(1)	20	3	23
	409	34	443

H<sub>0</sub> -

1 -  
( X<sup>2</sup> )

2 -  
( X<sup>2</sup> )

,	278	26	304
,	131	8	139
	409	34	443

,	280,668	23,332	304
,	128,332	10,668	139
	409	34	443

	/	/	/	/
( )	278	26	131	8
(E <sub>i</sub> )	280,668	23,332	128,332	10,668
(O <sub>i</sub> - E <sub>i</sub> )	-2,668	2,668	2,668	-2,668
	7,119	7,119	7,119	7,119
(O <sub>i</sub> - E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub>	0,025365	0,305126	0,05547	0,667325

Excel	
( )	0,78836
	2
>	2
<	1

	0,05
	1

> 1  
< 2

H<sub>0</sub>

	1,05329
	3,84
	2



17:

(4)	100	11	111
(3)	191	16	207
(2)	110	7	117
(1)	8	2	10
	409	36	445

H<sub>0</sub> -

1 -  
( X<sup>2</sup> )

2 -  
( X<sup>2</sup> )

,	291	27	318
,	118	9	127
	409	36	445

,	292,274	25,726	318
,	116,726	10,274	127
	409	36	445

( )	291	27	118	9
(E <sub>i</sub> )	292,274	25,726	116,726	10,274
(O <sub>i</sub> - E <sub>i</sub> )	-1,274	1,274	1,274	-1,274
	1,623	1,623	1,623	1,623
(O <sub>i</sub> - E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub>	0,005555	0,063107	0,01391	0,158016

Excel	
( )	0,97079
	2
>	2
<	1

	0,05
	1

>	1
<	2

H<sub>0</sub>

	0,240586
	3,84
	2



18.1 :

(4)	162	16	178
(3)	155	13	168
(2)	75	5	80
(1)	17	2	19
	409	36	445

H<sub>0</sub> -

1 -  
( X<sup>2</sup> )

2 -  
( X<sup>2</sup> )

,	317	29	346
,	92	7	99
	409	36	445

,	318,009	27,991	346
,	90,991	8,009	99
	409	36	445

	/	/	/	/
( )	317	29	92	7
(E <sub>i</sub> )	318,009	27,991	90,991	8,009
(O <sub>i</sub> - E <sub>i</sub> )	-1,009	1,009	1,009	-1,009
	1,018	1,018	1,018	1,018
(O <sub>i</sub> - E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub>	0,003201	0,036371	0,01119	0,127114

Excel	
( )	0,98108
	2
>	2
<	1

	0,05
	1

> 1  
< 2

H<sub>0</sub>

	0,177875
	3,84
	2



18.2 :

(4)	132	15	147
(3)	152	15	167
(2)	67	5	72
(1)	18	1	19
	369	36	405

H<sub>0</sub> -

1 -  
( X<sup>2</sup> )

2 -  
( X<sup>2</sup> )

,	284	30	314
,	85	6	91
	369	36	405

,	286,089	27,911	314
,	82,911	8,089	91
	369	36	405

	/	/	/	/
( )	284	30	85	6
(E <sub>i</sub> )	286,089	27,911	82,911	8,089
(E <sub>i</sub> - E <sub>i</sub> )	-2,089	2,089	2,089	-2,089
	4,363	4,363	4,363	4,363
(E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub>	0,015252	0,156334	0,05263	0,539438

Excel	
( )	0,85814
	2
>	2
<	1

	0,05
	1

> 1  
< 2

H<sub>0</sub>

	0,763653
	3,84
	2



18.3 :

(4)	165	13	178
(3)	159	17	176
(2)	69	4	73
(1)	16	2	18
	409	36	445

H<sub>0</sub> -

1 -  
( X<sup>2</sup> )

2 -  
( X<sup>2</sup> )

,	324	30	354
,	85	6	91
	409	36	445

,	325,362	28,638	354
,	83,638	7,362	91
	409	36	445

	/	/	/	/
( i )	324	30	85	6
(E <sub>i</sub> )	325,362	28,638	83,638	7,362
( E <sub>i</sub> - E <sub>i</sub> )	-1,362	1,362	1,362	-1,362
	1,854	1,854	1,854	1,854
( (E <sub>i</sub> - E <sub>i</sub> ) <sup>2</sup> / E <sub>i</sub> )	0,0057	0,064756	0,02217	0,251908

Excel	
( )	0,95145
	2
>	2
<	1

	0,05
	1

> 1  
< 2

H<sub>0</sub>

	0,344536
	3,84
	2



18.4 :

(4)	163	12	175
(3)	158	18	176
(2)	71	5	76
(1)	17	1	18
	409	36	445

H<sub>0</sub> -

1 -  
( X<sup>2</sup> )

2 -  
( X<sup>2</sup> )

,	321	30	351
,	88	6	94
	409	36	445

,	322,604	28,396	351
,	86,396	7,604	94
	409	36	445

	/	/	/	/
( )	321	30	88	6
(E <sub>i</sub> )	322,604	28,396	86,396	7,604
(O <sub>i</sub> - E <sub>i</sub> )	-1,604	1,604	1,604	-1,604
	2,574	2,574	2,574	2,574
(O <sub>i</sub> - E <sub>i</sub> ) <sup>2</sup> / E <sub>i</sub>	0,00798	0,090662	0,0298	0,338537

Excel	
( )	0,92608
	2
>	2
<	1

	0,05
	1

>	1
<	2

H<sub>0</sub>

	0,466977
	3,84
	2



19 :

(4)	72	15	87
(3)	181	13	194
(2)	121	5	126
(1)	35	3	38
	409	36	445

H<sub>0</sub> -

1 -  
(  $\chi^2$  )

2 -  
(  $\chi^2$  )

,	253	28	281
,	156	8	164
	409	36	445

,	258,267	22,733	281
,	150,733	13,267	164
	409	36	445

	/	/	/	/
( i )	253	28	156	8
(E <sub>i</sub> )	258,267	22,733	150,733	13,267
( i - E <sub>i</sub> )	-5,267	5,267	5,267	-5,267
	27,746	27,746	27,746	27,746
(E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub> )	0,10743	1,220524	0,18407	2,091264

Excel	
( )	0,30761
	2
>	2
<	1

	0,05
	1

> 1  
< 2

H<sub>0</sub>

	3,60329
	3,84
	2



20 :

(4)	118	12	130
(3)	179	16	195
(2)	94	6	100
(1)	18	2	20
	409	36	445

H<sub>0</sub> -

1 -  
( X<sup>2</sup> )

2 -  
( X<sup>2</sup> )

,	297	28	325
,	112	8	120
	409	36	445

,	298,708	26,292	325
,	110,292	9,708	120
	409	36	445

	/	/	/	/
(i)	297	28	112	8
(E <sub>i</sub> )	298,708	26,292	110,292	9,708
(i-E <sub>i</sub> )	-1,708	1,708	1,708	-1,708
	2,917	2,917	2,917	2,917
(E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub>	0,009765	0,110938	0,02645	0,300458

Excel	
( )	0,93024
	2

↓

>	2
<	1

	0,05
	1

> 1  
< 2

H<sub>0</sub>

	0,447607
	3,84
	2





21 :

(4)	132	12	144
(3)	161	17	178
(2)	102	5	107
(1)	14	2	16
	409	36	445

H<sub>0</sub> -

1 -  
(  $\chi^2$  )

2 -  
(  $\chi^2$  )

,	293	29	322
,	116	7	123
	409	36	445

,	295,951	26,049	322
,	113,049	9,951	123
	409	36	445

	/	/	/	/
( i )	293	29	116	7
(E <sub>i</sub> )	295,951	26,049	113,049	9,951
( i - E <sub>i</sub> )	-2,951	2,951	2,951	-2,951
	8,706	8,706	8,706	8,706
(E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub> )	0,029416	0,334204	0,07701	0,874907

Excel	
( )	0,72545
	2
>	2
<	1

	0,05
	1

> 1  
< 2

H<sub>0</sub>

	1,315536
	3,84
	2



22 :

(4)	55	12	67
(3)	215	16	231
(2)	117	6	123
(1)	22	2	24
	409	36	445

H<sub>0</sub> -

1 -  
(  $\chi^2$  )

2 -  
(  $\chi^2$  )

,	270	28	298
,	139	8	147
	409	36	445

,	273,892	24,108	298
,	135,108	11,892	147
	409	36	445

(i)	270	28	139	8
(E <sub>i</sub> )	273,892	24,108	135,108	11,892
(i-E <sub>i</sub> )	-3,892	3,892	3,892	-3,892
	15,149	15,149	15,149	15,149
$\frac{(E_i)^2}{E_i}$	0,055309	0,628372	0,11212	1,273843

Excel	
( )	0,55808
	2
>	2
<	1

0,05
1

>	1
<	2

2,069647
3,84
2



H<sub>0</sub>

23 :

(4)	121	15	136
(3)	162	13	175
(2)	112	5	117
(1)	14	3	17
	409	36	445

H<sub>0</sub> -

1 -  
(  $\chi^2$  )

2 -  
(  $\chi^2$  )

,	283	28	311
,	126	8	134
	409	36	445

,	285,840	25,160	311
,	123,160	10,840	134
	409	36	445

(i)	283	28	126	8
(E <sub>i</sub> )	285,840	25,160	123,160	10,840
(i-E <sub>i</sub> )	-2,840	2,840	2,840	-2,840
	8,068	8,068	8,068	8,068
(E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub>	0,028226	0,32068	0,06551	0,744264

Excel	
( )	0,76293
	2

↓

>	2
<	1

	0,05
	1

> 1  
< 2

H<sub>0</sub>

	1,158679
	3,84
	2



24 : " - "

(4)	140	17	157
(3)	171	11	182
(2)	81	6	87
(1)	17	2	19
	409	36	445

H<sub>0</sub> -

1 -  
(  $\chi^2$  )

2 -  
(  $\chi^2$  )

,	311	28	339
,	98	8	106
	409	36	445

,	311,575	27,425	339
,	97,425	8,575	106
	409	36	445

	/	/	/	/
(i)	311	28	98	8
(E <sub>i</sub> )	311,575	27,425	97,425	8,575
(i-E <sub>i</sub> )	-0,575	0,575	0,575	-0,575
	0,331	0,331	0,331	0,331
(E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub>	0,001062	0,012068	0,0034	0,038593

Excel	
( )	0,99661
	2

↓

>	2
<	1

	0,05
	1

> 1  
< 2

	0,05512
	3,84
	2



H<sub>0</sub>

25 :

(4)	53	15	68
(3)	200	12	212
(2)	103	7	110
(1)	53	2	55
	409	36	445

H<sub>0</sub> -

1 -  
( X<sup>2</sup> )

2 -  
( X<sup>2</sup> )

,	253	27	280
,	156	9	165
	409	36	445

,	257,348	22,652	280
,	151,652	13,348	165
	409	36	445

	/	/	/	/
( i )	253	27	156	9
(E <sub>i</sub> )	257,348	22,652	151,652	13,348
( i - E <sub>i</sub> )	-4,348	4,348	4,348	-4,348
	18,908	18,908	18,908	18,908
(E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub> )	0,073472	0,834721	0,12468	1,416496

Excel	
( )	0,48451
	2
>	2
<	1

	0,05
	1

> 1  
< 2

H<sub>0</sub>

	2,449369
	3,84
	2



26 :

(4)	84	13	97
(3)	224	14	238
(2)	69	7	76
(1)	32	2	34
	409	36	445

H<sub>0</sub> -

1 -  
(  $\chi^2$  )

2 -  
(  $\chi^2$  )

,	308	27	335
,	101	9	110
	409	36	445

,	307,899	27,101	335
,	101,101	8,899	110
	409	36	445

	/	/	/	/
( )	308	27	101	9
(E <sub>i</sub> )	307,899	27,101	101,101	8,899
( $O_i - E_i$ )	0,101	-0,101	-0,101	0,101
	0,010	0,010	0,010	0,010
$(O_i - E_i)^2 / E_i$	3,32E-05	0,000377	0,0001	0,001149

Excel	
( )	0,99998
	2
>	2
<	1

	0,05
	1

>	1
<	2

H<sub>0</sub>

	0,001661
	3,84
	2



27 :

(4)	93	14	107
(3)	210	14	224
(2)	91	7	98
(1)	15	1	16
	409	36	445

H<sub>0</sub> -

1 -  
(  $\chi^2$  )

2 -  
(  $\chi^2$  )

,	303	28	331
,	106	8	114
	409	36	445

,	304,222	26,778	331
,	104,778	9,222	114
	409	36	445

( )	303	28	106	8
(E <sub>i</sub> )	304,222	26,778	104,778	9,222
( $O_i - E_i$ )	-1,222	1,222	1,222	-1,222
	1,494	1,494	1,494	1,494
$(O_i - E_i)^2 / E_i$	0,004912	0,055809	0,01426	0,162043

Excel	
( )	0,9714
	2
>	2
<	1

	0,05
	1

>	1
<	2

H<sub>0</sub>

	0,237028
	3,84
	2



28 :

(4)	75	14	89
(3)	211	16	227
(2)	106	5	111
(1)	17	1	18
	409	36	445

H<sub>0</sub> -

1 -  
(  $\chi^2$  )

2 -  
(  $\chi^2$  )

,	286	30	316
,	123	6	129
	409	36	445

,	290,436	25,564	316
,	118,564	10,436	129
	409	36	445

	/	/	/	/
(i)	286	30	123	6
(E <sub>i</sub> )	290,436	25,564	118,564	10,436
(i-E <sub>i</sub> )	-4,436	4,436	4,436	-4,436
	19,678	19,678	19,678	19,678
(E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub>	0,067752	0,769741	0,16597	1,885567

Excel	
( )	0,40905
	2
>	2
<	1

	0,05
	1

>	1
<	2

H<sub>0</sub>

	2,889028
	3,84
	2





29 :

(4)	91	14	105
(3)	200	13	213
(2)	99	7	106
(1)	19	2	21
	409	36	445

H<sub>0</sub> -

1 -  
(  $\chi^2$  )

2 -  
(  $\chi^2$  )

,	291	27	318
,	118	9	127
	409	36	445

,	292,274	25,726	318
,	116,726	10,274	127
	409	36	445

	/	/	/	/
(i)	291	27	118	9
(E <sub>i</sub> )	292,274	25,726	116,726	10,274
(i-E <sub>i</sub> )	-1,274	1,274	1,274	-1,274
	1,623	1,623	1,623	1,623
(E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub>	0,005555	0,063107	0,01391	0,158016

Excel	
( )	0,97079
	2
>	2
<	1

	0,05
	1

>	1
<	2

H<sub>0</sub>

	0,240586
	3,84
	2



30 :

(4)	202	18	220
(3)	146	13	159
(2)	56	5	61
(1)	5	0	5
	409	36	445

H<sub>0</sub> -

1 -  
(  $\chi^2$  )

2 -  
(  $\chi^2$  )

,	348	31	379
,	61	5	66
	409	36	445

,	348,339	30,661	379
,	60,661	5,339	66
	409	36	445

	/	/	/	/
(i)	348	31	61	5
(E <sub>i</sub> )	348,339	30,661	60,661	5,339
(i-E <sub>i</sub> )	-0,339	0,339	0,339	-0,339
	0,115	0,115	0,115	0,115
(E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub>	0,000331	0,003755	0,0019	0,021565

Excel	
( )	0,99879
	2
>	2
<	1

	0,05
	1

> 1  
< 2

H<sub>0</sub>

	0,027549
	3,84
	2



31 :

(4)	173	20	193
(3)	178	14	192
(2)	44	2	46
(1)	14	0	14
	409	36	445

H<sub>0</sub> -

1 -  
( X<sup>2</sup> )

2 -  
( X<sup>2</sup> )

,	351	34	385
,	58	2	60
	409	36	445

,	353,854	31,146	385
,	55,146	4,854	60
	409	36	445

	/	/	/	/
( )	351	34	58	2
(E <sub>i</sub> )	353,854	31,146	55,146	4,854
(O <sub>i</sub> - E <sub>i</sub> )	-2,854	2,854	2,854	-2,854
	8,145	8,145	8,145	8,145
(O <sub>i</sub> - E <sub>i</sub> ) <sup>2</sup> / E <sub>i</sub>	0,023018	0,261508	0,1477	1,678007

Excel	
( )	0,54985
	2
>	2
<	1

	0,05
	1

> 1  
< 2

H<sub>0</sub>

	2,110229
	3,84
	2

