Markov prediction-based contemporary youth worker value guidance research

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ABSTRACT

Youth worker is main force that a country goes in for social production, and youth is always the most dynamic, vigorous and creative one in any time. Youth worker value guidance impacts on a country productive forces level to some extent. The paper analyzes Chinese contemporary youth worker value guidance, it is clear that contemporary youth monthly expenditure status "Have surplus every month" and "Spend what one earned" state occurrence probabilities will go beyond that of "Often overdraft", therefore it is clear that "Overdraft every month" state will disappear among youth workers. And then analyze main factors that youth thinks to affect job hunting; it is clear that contemporary youth worker mainstream thinks that job hunting influences factors as "personal ability", "sex factor" are the least. Finally analyze contemporary youth worker dependence on network, it gets that contemporary youth worker has certain dependence on network. © 2014 Trade Science Inc. - INDIA

INTRODUCTION

In the tide of Chinese deepen reformation, Chinese contemporary youth worker as modern social production main force, contemporary youth value guidance decides social production situations. With opening-up and reform, it let Chinese society not to be a closed space, university campus also not to be pure "Ivory power" any more. In the atmosphere of " Re-valuation", network era and information explosion conditions, temptation to contemporary youth is relative great, network information varying qualities, contemporary youth worker suffers all kinds of thinking ways influences, their lifestyle and work value guidance have certain impacts.

Chinese contemporary youth worker needs value guidance, in the report of Chinese 18th national congress of the communist party, it pointed out that "Take morality establishment and people cultivation as educational basic tasks, and should cultivate morals, intelligence, physical fitness, aesthetics and work comprehensive developed successor and builder of socialism". Therefore, it needs that Chinese youth worker to put value guidance in the important place. Value guidance as country and social development directional factor, mainstream value formation requires most of people to joint advocate and carry forward, advocate mainstream value guidance process, meanwhile is also country and society common required value and value guidance.

In recent years, academic circles have taken socialistic core value and socialistic part-time job system

cultivation research as a hot topic. By far, though there are lots of socialistic core value that basically cover youth worker core value main contents, and it also has certain achievements, still has some shortcomings, these shortcomings mainly reflect in two aspects: one, some researches mainly concentrate on social core value theoretical exploration and reflection that lacks of concern about youth worker, less researches on youth worker value guidance. Two, presently it lacks of youth worker socialistic core value educational researches, and it concentrates on educational path theoretical exploration that lacks of corresponding practice without corresponding thinking from the perspective of youth worker. How to correctly guide youth worker to have good value guidance should be studied so that solve presently youth worker existing some practical psychological problems.

MODEL ESTABLISHMENT AND APPLICATION

For comprehensive prediction on events, not only should point out all kinds of possible results that events occur, but also should give every kind of result occurrence probability, explain predicted events every result possibility degree in prediction period. It is probability prediction on events occurrence.

Regarding Markov prediction method, is a kind of method about events occurrence possibility sizes prediction. It predicts future one moment change status according to predicted things present situations. Markov prediction method is also one of state prediction important methods. Figure 1 is Markov prediction process.
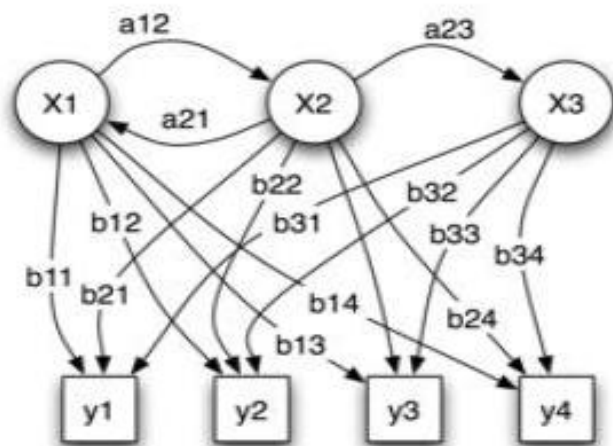

Figure 1: Markov prediction process

Markov prediction model

In Markov prediction, "state" is an important term. So-called state refers to one event appeared one result at sometime (or period). Such as, in goods sales relative prediction, it has "best seller", "normal", "unsolvable" and so on; in agriculture yield prediction, it has "harvest", "ordinary yield", "bad crop" and so on; in population composition prediction, it has "infant", "child", "juvenile", "youth", "middle age", "old age" and so on; in contemporary youth worker value guidance(expenditure orientation), it has "spend what one earned", "Has surplus every month", "often overdraft" and so on. In the whole event development process, transform from one case to another one, it can be called state transfer. If every time relative state transfer is only related to previous time phase state and unrelated to past other states, that is to say state transferring process has no impact on future, such transfer process is called Markov process.

In the whole things change process, transform into another case possibility size from one state to next time changes is called state transformation probability. According to relative conditional probability definition, it is clear that transformation from case E_i into case E_j, transfer probability $P(E_i \rightarrow E_j)$ is conditional transformational probability $P(E_j / E_i)$, that is: $P(E_i \rightarrow E_j) = P(E_j / E_i)$

If one kind of predicted case of them has $E_1, E_2, \cdots, E_n$, total n kinds of possible occurrence cases. It can record that P_{ij} is state transfer probability from case E_i to case E_j as probability matrix.

$$P = \begin{bmatrix} P_{11} & P_{12} & \cdots & P_{1n} \\ P_{21} & P_{22} & \cdots & P_{2n} \\ \vdots & \vdots & \vdots & \vdots \\ P_{n1} & P_{n2} & \cdots & P_{nn} \end{bmatrix}$$

Then it calls P state transfer probability matrix.

If predicted one case currently is in the state E_i, then at one time in future, it might possible to transfer from case E_i to any case of $E_1, E_2, \cdots, E_n$. There-

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fore, P_{ij} meets following conditions :

$$\begin{cases} 0 \le P_{ij} \le 1 & (i, j = 1,2,\cdots,n) \\ \sum_{j=1}^{n} P_{ij} = 1 & (i = 1,2,\cdots,n) \end{cases}$$

Generally, we call any matrix that meets above conditions as random matrix, or probability matrix. It is not difficult to prove, if P is probability matrix, then to any number $m > 0$, matrix P_m is probability matrix.

If regard P as probability matrix, and it exists positive integer $m > 0$, let matrix P_m each kind of elements to be above zero, then it can call P is standard probability matrix. In this way, it can prove that if P is standard probability matrix, it will have vector $a = [x_1, x_2, \cdots, x_n]$ that is above zero, and x_i meets $0 \le x_i \le 1$ and $\sum_{i=1}^{n} x_i = 1$, it can get: $ap = a$ Such

vector α is called equilibrium shifting vector.

Calculate state transformational probability relative matrix as P, we need that every case to other case transfer probability $P_{ij}(i, j = 1,2,\cdots,n)$. In order to better solve any one P_{ij}, we adopt frequency approximate probability method ideas here.

Consider contemporary youth worker value guidance state that is "spend what one earned", "Has surplus every month", "often overdraft". Record E_1 as "often overdraft" state, E_2 as "spend what one earned" state, E_3 as "Has surplus every month" state. Below Table 1 presents contemporary youth worker value guidance change cases.

In the following, we are going to calculate the contemporary youth worker value guidance transfer probability.

From TABLE 1, it is clear that from fifteen state transferring that starts from E_1 (transfer out), there are

TABLE 1 : Contemporary youth worker value guidance change cases

No.	1	2	3	4	5	6	7	8	9	10
State	E_1	E_1	E_2	E_3	E_2	E_1	E_3	E_2	E_1	E_2
No.	11	12	13	14	15	16	17	18	19	20
State	E_3	E_1	E_2	E_3	E_1	E_2	E_1	E_3	E_3	E_1
No.	21	22	23	24	25	26	27	28	29	30
State	E_3	E_3	E_2	E_1	E_1	E_3	E_2	E_2	E_1	E_2
No.	31	32	33	34	35	36	37	38	39	40
State	E_1	E_3	E_2	E_1	E_1	E_2	E_2	E_3	E_1	E_2

three ones are transferring from E_1 to E_1 (that is 1→2, 24→25, 34→35), seven ones are transferring from E_1 to E_2 (that is 2→3, 9→10, 12→13, 15→16, 29→30, 35→36, 39→40), five ones are transferring from E_1 to E_3 (that is 6→7, 17→18, 20→21, 25→26, 31→32).

$$P_{11} = P(E_1 \to E_1) = P(E_1|E_1) = \frac{3}{15} = 0.2000$$

$$P_{12} = P(E_1 \to E_2) = P(E_2|E_1) = \frac{7}{15} = 0.4667$$

$$P_{13} = P(E_1 \to E_3) = P(E_3|E_1) = \frac{5}{15} = 0.3333$$

According to above same methods, calculate and

can get:

$$P_{21} = P(E_2 \to E_1) = P(E_1|E_2) = \frac{7}{13} = 0.5385$$

$$P_{22} = P(E_2 \to E_2) = P(E_2|E_2) = \frac{2}{13} = 0.1538$$

$$P_{23} = P(E_2 \to E_3) = P(E_3|E_2) = \frac{4}{13} = 0.3077$$

$$P_{31} = P(E_3 \to E_1) = P(E_1|E_3) = \frac{4}{11} = 0.3636$$

$$P_{32} = P(E_3 \to E_2) = P(E_2|E_3) = \frac{5}{11} = 0.4545$$

$$P_{33} = P(E_3 \to E_3) = P(E_3|E_3) = \frac{2}{11} = 1818$$

Therefore, contemporary youth worker value guidance state transferring probability matrix is:

$$P = \begin{bmatrix} 0.200 & 0.4667 & 0.3333 \\ 0.538 & 0.1538 & 0.3077 \\ 0.363 & 0.4545 & 0.1818 \end{bmatrix}$$

Markov prediction method

In order to better use Markov prediction method to make probability prediction on whole things development occurrence cases, here it needs to introduce a noun that is state probability $\pi_j(k)$. $\pi_j(k)$ Represents in case that things are known in the beginning ($k = 0$), after k times of state transformation, the k moment event possibility of being in the state E_j. According to probability features, it is easily got: $\sum_{j=1}^{n} \pi_j(k) = 1$

Start from one-based case, go through k times of state transformation, and then arrive at state E_j such transformation process can be regarded here as firstly going through $(k-1)$ times of state transformation and then arrive at another state $E_i (i = 1,2,\cdots,n)$, and using E_i to go through one time state transformation to arrive at located state E_j. According to Markov prediction process, for future no impact and Bayes conditional probability, it can get:

$$\pi_j(k) = \sum_{i=1}^{n} \pi_j(k-1)P_{ij}, (j = 1,2,\cdots,n)$$

Here record line vector $\pi(k) = [\pi_1(k), \pi_2(k), \cdots, \pi_n(k)]$, then by above formula, it can calculate relative cases probabilities recursion formula:

$$\begin{cases} \pi(1) = \pi(0)P \\ \pi(2) = \pi(1)P = \pi(0)P^2 \\ \quad\vdots \\ \pi(k) = \pi(k-1)P = \pi(0)P^k \end{cases}$$

In recursion formula, $\pi(0) = [\pi_1(0), \pi_2(0), \cdots, \pi_n(0)]$ is initial state probability vector.

The k moment(period) state probabilistic prediction:

By above analysis, it is known that one moment initial case is known(that $\pi(0)$ is known), then use above deduced recursion formula, it can easily get that events after k times state transformation, in the k time phase all kinds of possible states possibility size (that is $\pi(k)$), we can get the event state probabilistic prediction at the k time phase.

In above analysis, if contemporary youth worker value guidance is "Has surplus every month" that is recorded as $\pi(0) = [0,1,0]$, then input state transferring probability matrix formula and $\pi(0)$ into above recursion formula, it can solve future months' contemporary youth worker value guidance cases (refer to TABLE 2).

Ultimate state probabilistic prediction:

After numerous times state transformation, obtained state possibility size is called ultimate state probability, if we record ultimate state probability vector as $\pi = [\pi_1, \pi_2, \cdots, \pi_n]$ here, then:

$$\pi_i = \lim_{k\to\infty} \pi_i(k), (i = 1,2,\cdots,n)$$

That has: $\lim_{k\to\infty} \pi_i(k) = \lim_{k\to\infty} \pi_i(k+1) = \pi$

Input above formula into Markov prediction model recursion formula, it gets: $\pi = \pi P$

Therefore, we deduce cases that ultimate state probability should meet:

$(1) \pi = \pi P$

$(2) 0 \leq \pi_i \leq 1, (i = 1,2,\cdots,n)$

$(3) \sum_{i=1}^{n} \pi_i = 1$

In above formula, (2)and(3) are conditions when calculate state probability, among them, condition(2) can be expressed as: after infinite times' state transformation, things case surely should be one from n pieces of cases; condition (1)is the formula that calculates ultimate state probability. Ultimate state probability is used to predict relative important information which trend Markov process will appear in the future.

In contemporary youth worker value guidance probabilistic prediction, set ultimate state probability to be $\pi = [\pi_1, \pi_2, \pi_3]$, then:

$$[\pi_1, \pi_2, \pi_3] = [\pi_1, \pi_2, \pi_3] \begin{bmatrix} 0.200 & 0.4667 & 0.3333 \\ 0.538 & 0.1538 & 0.3077 \\ 0.363 & 0.4545 & 0.1818 \end{bmatrix}$$

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TABLE 2 : Future several times' contemporary youth worker value guidance cases

No.	41			42			43			44		
	E_1	E_2	E_3	E_1	E_2	E_3	E_1	E_2	E_3	E_1	E_2	E_3
State probability	0.5385	0.1528	0.3077	0.3024	0.4148	0.2837	0.3867	0.3334	0.2799	0.3587	0.3589	0.2779
No.	45			46			47			48		
	E_1	E_2	E_3	E_1	E_2	E_3	E_1	E_2	E_3	E_1	E_2	E_3
State probability	0.3677	0.3509	0.2709	0.3647	0.3532	0.2799	0.3656	0.3524	0.2799	0.3653	0.3526	0.2799
No.	49			50			51					
	E_1	E_2	E_3	E_1	E_2	E_3	E_1	E_2	E_3			
State probability	0.3653	0.3525	0.2799	0.3653	0.3525	0.2799	0.3653	0.3525	0.2799			

TABLE 3 : Contemporary youth worker monthly consumption status

Monthly consumption basic status	number of people take selection	Percentage
Spend what one earned	120	24%
Has surplus every month	220	44%
Often overdraft	60	12%
Indeterminate case	100	20%

(Data source: Dai Bing and others sorted result through questionnaire survey of "Contemporary youth worker value guidance research")
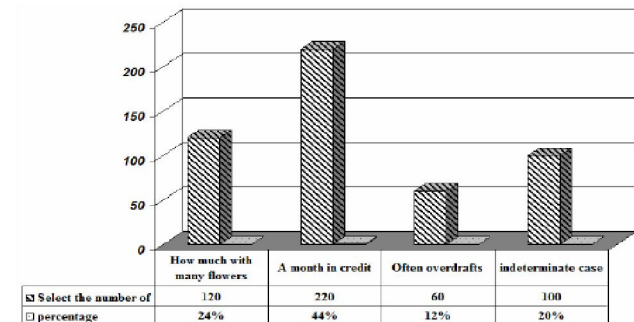

Figure 2 : Contemporary youth worker month consumption

Job hunting influence factor	Number of people take selection	Percentage
Personal ability	403	80.50%
Sex factors	46	9.10%
Looks	67	13.30%
Work experience	192	38.30%
Certificate	47	9.30%
Education background	279	55.80%
Family background	279	55.70%

(Data source: Dai Bing and others sorted result through questionnaire survey of "Contemporary youth worker value guidance research")

That is:
$$\begin{cases} \pi_1 = 0.2000\pi_1 + 0.5380\pi_2 + 0.363\pi_3 \\ \pi_2 = 0.4667\pi_1 + 0.1538\pi_2 + 0.4545\pi_3 \\ \pi_3 = 0.333\pi_1 + 0.3077\pi_2 + 0.1818\pi_3 \end{cases}$$

Solve equation set and can get: $\pi_1 = 0.3655, \pi_2 = 0.3525, \pi_3 = 0.2799$

It shows contemporary youth worker value guidance change cases after infinite times' state transferring, "Has surplus every month" and "spend what one earned"
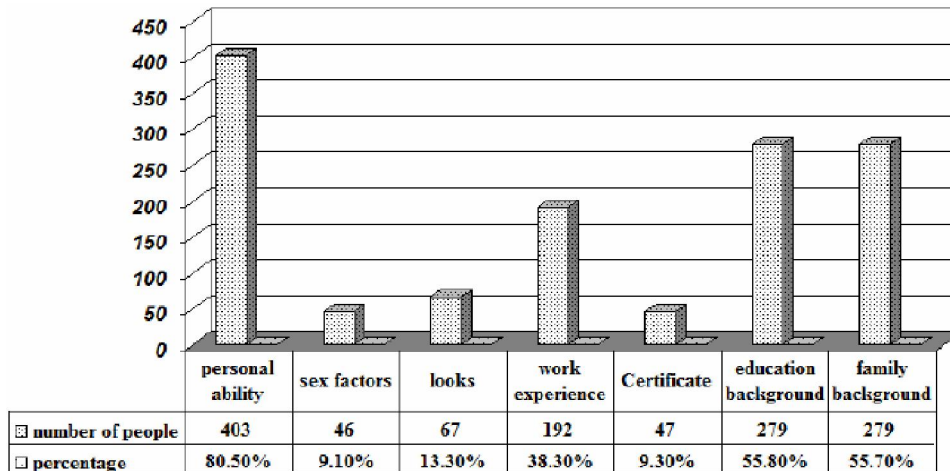

Figure 3 : In the process of job hunting, the influencing factors of success

state occurrence probabilities will above that of "often overdraft".

Markov prediction-based contemporary youth worker value guidance

Here, firstly make questionnaire survey on contemporary youth worker monthly consumption status, its selection result is as TABLE 3.

Correspond to above data; it makes "black-white bar chart" as Figure 2.

From above statistical result analysis, it is clear that "often overdraft case" occupies the least proportion that is only 12%, most of contemporary youth worker monthly consumption status are mostly still as "moonlight clan", and 24% of contemporary youth worker has surplus every month.

Then to contemporary youth job hunting process, make statistical analysis of success influence factors, its result is as TABLE 4.

Correspond to above data; it makes "black-white bar chart" as Figure 3.

Finally, makes statistical analysis of contemporary youth worker dependence status on network, its statistical result is as TABLE 5.

Correspond to above data; it makes "black-white bar chart" as Figure 4

From corresponding above data analysis, it is clear that Chinese contemporary youth worker mostly has some dependency on network, thereupon Chinese contemporary youth worker should face network.

TABLE 5 : Contemporary youth worker dependence status on network

Option	Number of people take selection	Percentage
Have, it is internet addiction, will feel ill if not surf on-line and play for a long time every day	75	15%
Although some network dependence, can control oneself	312	62.30%
No, internet surfing time is shorter without relying on network	114	22.70%

(**Data source: Dai Bing and others sorted result through questionnaire survey of "Contemporary youth worker value guidance research"**)
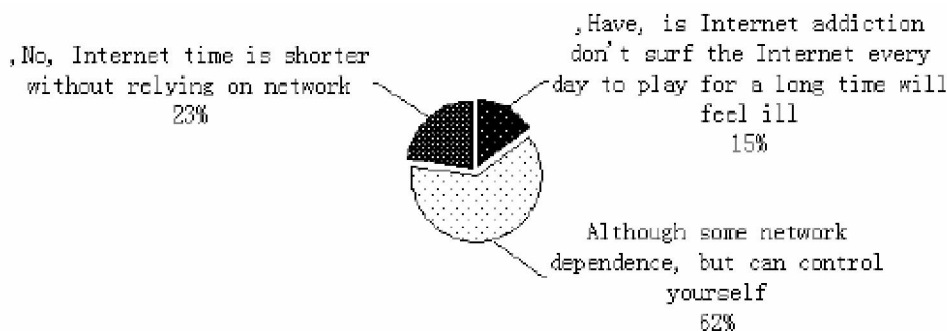
Figure 4 : Contemporary youth worker dependence on the network

CONCLUSION

Here, by analyzing Chinese contemporary youth worker value guidance, it is clear that contemporary youth monthly expenditure status "Have surplus every month" and "Spend what one earned" state occurrence probabilities will go beyond that of "Often overdraft", therefore it is clear that "Overdraft every month" state will disappear among youth workers. And then analyze main factors that youth thinks to affect job hunting; it is clear that contemporary youth worker mainstream thinks that job hunting influences factors as "personal ability", "sex factor" are the least. Finally analyze contemporary youth worker dependence on network, it gets that contemporary youth worker has certain dependence on network. Though the process has some reliability to some extent, it will have some deviations due to objective conditions' constraints (When make data statistics, range is not wide enough).

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