

PERSONAL SALES PROCESS VIA FACTOR ANALYSIS

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Abstract

The main aim of this paper is to identify the personal factors of the salesman, which are more relevant to achieving sales success. The second aim is to categorize the verbal and nonverbal communication in personal sales process, but it should taken in account the fact, that the every of those level can have different significant, for each person. And the last task of current research is to determine, if there are some differences between men and women perception of personal sales process. Data were collected during the research, which was conducted in the Czech Republic on more than 500 respondents. All respondents rated the personal factors of salesman and his verbal and nonverbal communication within 4 videos, which were played to respondents. The data from current research were analysed via factor analysis. The conceptual model of personal selling has been adapted for the Czech Republic, with regard to cross-cultural differences.

Key words: marketing, personal sales, cross-cultural differences, factor analysis

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Introduction

The conversation in face-to-face sales process hold on in three meta-levels: affection, behaviour and cogitation, in common. However, every of those level can have different significant, for each person. According to Hagen's study, there are some different between men and women perception in personal sales (Hagen, Amin, 1997). Hence, one of the task of current research is to determine, if there are some differences between men and women perception of personal sales process.

Three meta-levels in face-to-face sales process called general model of consumer behaviour or ABC model. Consumer and salesman behaviour, their impacts on sales success was also studied by Bande (Bande, 2015), by McFarland (McFarland, 2016), and by Shannahan (Shannahan, 2015). All of those authors stayed, that emotional intelligence, which including affection, behaviour, cognition, authenticity impacts sales success. However, should

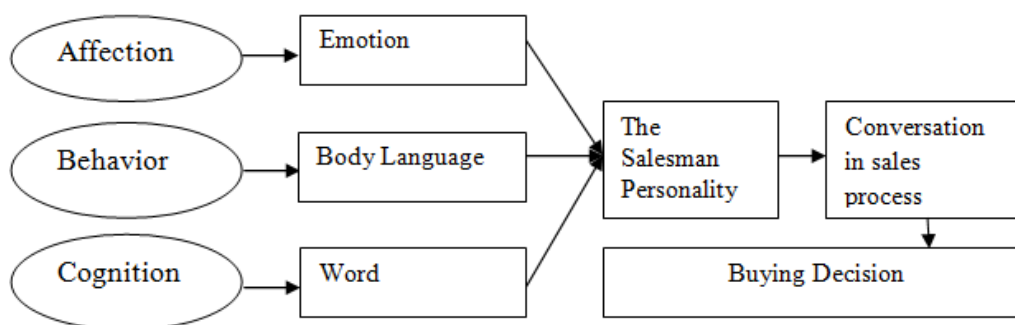
keep in mind, that this model just is only common model, and every country has its traditions, cultures and hence each nation has its own model of behaviour, including of consumer behaviour. In this paper we try to answer the main question, if the behaviour of Czech consumers different from the proposed general model.

The study utilized an observational design approach. Personal selling scenarios were filmed and shown to respondents who completed a sales effectiveness survey. The resulting data was analysed via a factor model, hence a conceptual personal sales model was developed

1 Personal sales

Conversations in the sales process are under way by three objects: business, product and salesman. Current research focuses on authenticity as on a key factor in the successful sales sale process. Salesmen have been expressing emotions, their communicate through body language and present their know-how. If customers perceive this interplay as authentic, it has a positive effect on buying decision. It also corresponds with the generally accepted hierarchy ABC concept of consumer behaviour (Fig.1).

Fig. 1: ABC model of consumer behaviour



Source: Author

All those levels (affection, behaviour, and cognition) in ABC concept has sublevels. Thus, level „Affection“ can be describe with the help of „happy“, „pleased“, „satisfied“, „contented“, „stimulated“, „exacted“, „frenzier“, „agitated“, „controlling“, „dominant“, „autonomous“, and „influential“. Level „Behaviour“ can be describe with the help of the following variables:

1. Aiming to be himself rather than to be popular;
2. True to himself;
3. Communicates according to his values and beliefs;
4. He communicates authentically;
5. He is giving his own opinion;
6. He is not influenced by others;
7. He feels alienated from himself;
8. He has a high level of self-esteem.

And the last level „Cognition“ can be describe by the following variables:

1. The content of speech was fully clear and well-articulated;
2. The supporting argument content of speech was logically structured;
3. The speaker’s points flow logically from one to the next;
4. The content and style of the speech does refer to what is spoken;
5. The speaker was convincing;
6. The tone does relate to the overall impact of the content and the style.

As it is obvious, the number of variables is great. The aim is to find out whether if all variables have an impact on sales success, and if there is a different perception between women and men. Then, however, it is important to find the hidden link between this variable to describe the perception of consumers with the fewer number of variables and determine what are the most important for successful sales. To fulfil this aim the factor analysis will be used.

2 Factor analysis

Marketing searching for an accurate and tidy description of sales abilities lead to the necessary of using of factor analytic methods. Factor analysis is well-know multivariate statistical method, which is used in applied research and based on three concepts: data reduction, instrument development, and trait identification.

The goal of factor analysis is understand of causes. Therefore, factor analysis studies and describes variability among observed correlated variables with the help of lower number of

unobserved variables, called factors. Using factor analysis we can identify the hidden variables (factors), which are responsible for the existence of linear statistical correlation between variables. In brief, factor analysis helps us to describe the object of research comprehensively and compact at the same time.

According Rummsayer (Rummsayer, 2014) the main assumption of factor analysis is that each entering variable can be expressed as a linear combination of a small number of common factors and hidden single error factor. And the key concept of factor analysis is that multiple observed variables have similar patterns of responses because they are all associated with a latent (i.e. not directly measured) variable.

According to Melitky (Meloun, Militky, 2006) the process of factor analysis includes the following steps:

- 1) descriptive statistics measure (position and dispersion) – those classical estimates of individual variable must to inform us, that variables were selected correctly. In this step is necessary to pay attention on average measure of every variable, its standard deviation, and communality. Communality is quite important characteristic, which shows how well this variable is predicted by selected factors.
- 2) To calculate the correlation matrix. Correlation matrix – to assess the total correlation of data structure. With the help of Bartlett's sphericity test to assess if Factor Analysis can be applied on current data set. In case, if the total correlation is more, than 0.30, Factor Analysis can be applied on current data.
- 3) Selecting a number of factors by eigenvalues (is used those factors, whose eigenvalues greater than 1) or cumulative percentage (must be more, than 70%). The sum of the eigenvalues is equal to the number of variables, whose are included in current factor. Eigenvectors for each factor which help us to assess the size of eigenvectors, in other words, which of original variable strongly correlated with the current factor.
- 4) To calculate the factor weight for each factor (the correlation structure of each of the original variables with the current factor).
- 5) Determining the factor scores for each factor and describe the results.

2.1 Case study

Data obtained from the survey and video coding were merged and standardized for further analysis on MATLAB. The quality of the data was assessed and outliers, missing values, skewness and kurtosis were all checked. No abnormalities were observed.

The data from current study from 640 respondents were prepared for factor analysis. According to Tabachnik (Tabachnik, 2007) there are some assumptions for factor analysis: data must be relatively normally distributed, number of respondents should be 300, at least, and the last one is the recommended inspecting the correlation matrix for correlation coefficients over 0.30.

First two assumption of suitability were met: data are normally distributed; the number of respondents is more than 300 like for men, like for women. Based on above-mentioned assumptions the following variables were excluded from factor analysis (variables, which are not correlated).

Table 1: Excluded variables

Men	Women
Affection	
Stimulated	Stimulated
Excited	Excited
Autonomous	Autonomous
Dominant	Dominant
Influential	Influential
Controlling	Controlling
Agitated	Agitated
Frenzied	Frenzied
Cognition	
None	None
Behavior	
He has a high level of self-esteem.	He has a high level of self-esteem. He feels alienated from himself

To assess the suitability of data for factor analysis several tests should be provided. These tests include Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy (Kaiser, 1970) and Bartlett's Test of Sphericity (Bartlett, 1950). The KMO index is recommended when the cases to variable ratio are less than 1:5, in current research the variable ratio is 1:12, can be used The Bartlett's Test of Sphericity only. The Bartlett's Test of Sphericity should be significant (Table 2).

Table 2: Bartlett's Test of Sphericity

Bartlett's Test of Sphericity for men CZ	App. ChiSquare Df Sig.	2101, 312 675 0.001
Bartlett's Test of Sphericity for women CZ	App. ChiSquare Df Sig.	1763,987 1434 0.000

With the Bartlett's test help, was tested the null hypothesis that the correlation matrix is an identity matrix and all elements (besides diagonal) are zeroes, for data sets „Men“ and for „Women“. The value of the calculated level of significance p was smaller, than level of significance α (0,05), for data sets „Men“ and for „Women“. Hence, factor analysis can be applied to those data sets.

As mentioned above, the aim of the data extraction is reduce a large number of items (variables) into factors. Several criteria are available to researchers. The first one is according to Thompson and Daniel (Thompson, Daniel, 1996), simultaneous use of multiple decision rules is appropriate and often desirable. The other one is given by Hair et al., which point out that the majority of factor analysts typically use multiple criteria (Hair, 1995). Those criteria are: Kaiser's criteria (eigenvalue more, than 1), the Scree test, (Cattell, 1966), and the cumulative per cent of variance extracted (Horn, 1965).

Therefore, including all those criteria following conclusion can be drawn: the data sets “Men” and “Women” should be analysed for 3 factors.

The next step is the selection of rotational method. The aim of rotation is to simplify the factor structure of a group of items, or in other words, high item loadings on one factor and smaller item loadings on the remaining factor solutions (Costello, Osborne, 2005).

Obtained results and discussion

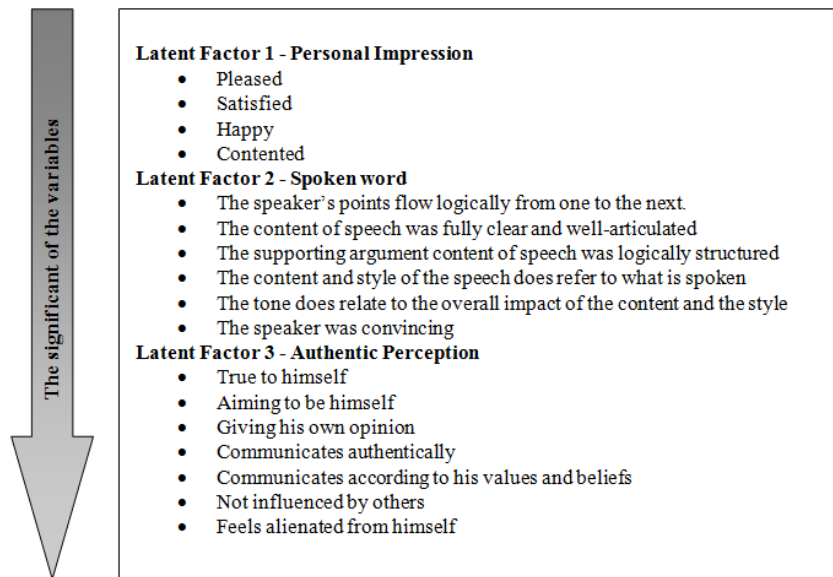
The data was divided according to gender. On the resulting two groups was conducted factor analysis. The main task of the current analysis was to find the latent factors that could explain the relationship between the observed variables and compare the latent factors between men and women. With factor analysis help were obtained the following results. The most important factor for men is Personal Impression, with the following variables: pleased, satisfied, happy, contented (in order of decreasing significance). There are the important variables, which are included in the second latent factor (Spoken Word - The speaker's points flow logically from one to the next, The content of speech was fully clear and well-articulated, The supporting argument content of speech was logically structured, The content

and style of the speech does refer to what is spoken, The tone does relate to the overall impact of the content and the style, The speaker was convincing).

And also the third latent factor is Authentic Perception, which includes the following variables (in order of decreasing significance): He is true to himself, He is aiming to be himself rather than to be popular, He is giving his own opinion, He communicates authentically, He communicates according to his values and beliefs, He is not influenced by others, He feels alienated from himself. Unlike men, for women in Czech Republic the most important is Spoken Words, with the following variables: - The supporting argument content of speech was logically structured, The speaker's points flow logically from one to the next, The content of speech was fully clear and well-articulated, The content and style of the speech does refer to what is spoken, The tone does relate to the overall impact of the content and the style, The speaker was convincing). And the second significant factor for women in personal sales process is Personal Impression with four variables: Satisfied, Pleased, Happy, Contented. And the third factor is the same for men and for women, Authentic Perception. And the significant variables here are: He is true to himself, He communicates according to his values and beliefs, He is not influenced by others, He communicates authentically, He is giving his own opinion.

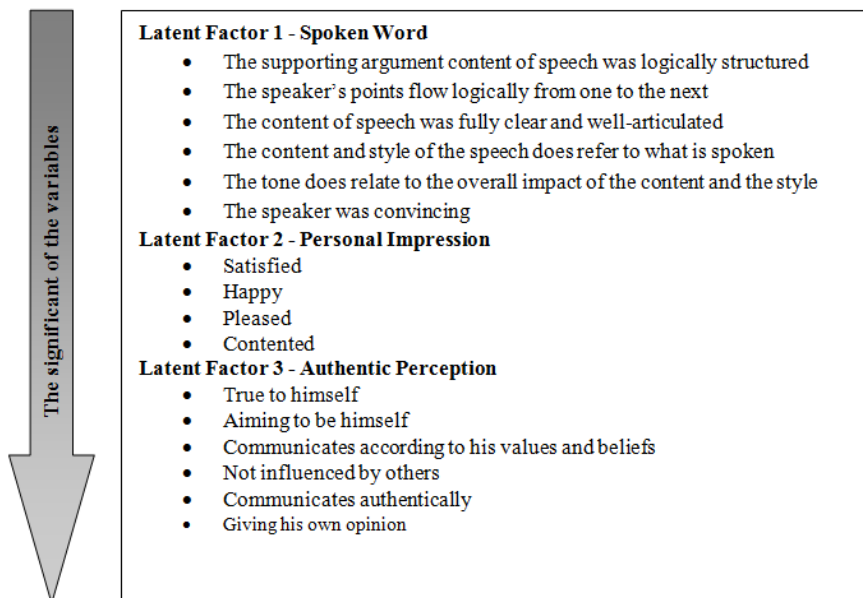
Obtained results of factor analysis are illustrated in Figure 1 and Figure 2, all factors are represented in order of decreasing significance.

Fig. 1: Results of the Factor Analysis for Men Czech Republic



Source: Author

Fig. 2: Results of the Factor Analysis for Women Czech Republic



Source: Author

Conclusion

Finally, the following outputs were obtained: were identified the personal factors of the salesman, which are more relevant to achieving sales success in case of Czech customer for men and for women. It should be noted, there are some gender difference in the perception of

the salesman's personal factors. For Czech women is the most important "Spoken Word", and less important is "Personal impression". Unlike women, for Czech men is the most important is "Personal impression", and less important "Spoken Word".

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