Model of communication effectiveness
in the mentoring process

EWA ROLLNIK-SADOWSKA, EWA GLIŃSKA, URSZULA RYCIUK
Faculty of Engineering Management
Bialystok University of Technology
Wiejska 45 A, 15-351 Bialystok
POLAND

Abstract: In this paper the authors analyse the conditions of effective communication in the mentoring process. In the literature on the subject effective business communication is considered as a key to planning, leading, organizing and controlling the resources of organizations to achieve their objectives. Still, communication models in the mentoring network have not been of interest to researchers yet. The aim of this study was to identify the factors that influence the effectiveness of communication in the mentoring process. The authors created a theoretical model of communication in the mentoring process which became a basis for primary research conducted among 103 mentors and 119 mentees in Poland. It occurred that the factors influencing the effectiveness of communication in the mentoring process are similar in both groups. Next, the authors incorporated the Exploratory Factor Analysis and Cronbach's alpha reliability test of different factors influencing the effectiveness of communication in the mentoring process. The results proved that all the developed scales demonstrated reliability above the recommended threshold. The final stage involved developing a regression model which allowed to identify the factors influencing the effectiveness of communication in the mentoring process. Those factors are: non-verbal channels and tools of communication, written and oral channels and tools of communication as well as social engagement in the mentoring process.

Key-Words: communication, communication model, effectiveness, mentoring process, mentors, mentees

1 Introduction

Effective business communication is a key to planning, leading, organizing and controlling the resources of organizations with an aim to achieve their objectives [1, 2]. Communication effectiveness is analysed from very diverse angles and within different contexts in various literature sources [3].

The performance of an organization depends on successful communication inside this organization at various levels and outside it in relation to business partners, government agencies and customers [4, 5, 6]. Only when organizations are fully aware of the principles of effective communication, will they be able to accomplish their goals and enhance their performance [7].

Communication means the process of transferring information and understanding between different departments and people within an organization. It includes various modes and media involved in communication interchanges [8]. Communication is not only about the interchange of messages; nowadays communication is more about sharing ideas and feelings as well as the willingness to participate in interactions [9]. It serves two essential functions in every organization – disseminating information needed by employees to get things done and building trust and commitment [10]. Effective communication minimizing strikes and lockouts, enhances intra-organizational relationships [11] and interorganizational relationships [12].

The communication process is considered successful if the receiver understands the message as intended by the sender. However, this situation is not always achieved due to various reasons, including incorrect encoding and decoding of the message, interfering messages and an incorrect choice of the communication channel [8, 13].

The literature on the subject offers many examples of research on barriers and obstacles affecting communication effectiveness [8, 14, 15]. Barriers to communication lead to miscommunication and cause problems in the course of this process, some of them being defensive reactions, cutting off further communication,

diminished chances to identify options and the resulting confusion or misunderstanding [8].

Barriers to communication can be external to participants, intrapersonal and interpersonal [14]. External barriers include among others: organizational structure and available technology. Intrapersonal barriers make such up issues as: personality, level of knowledge and emotional state. Interpersonal obstacles include the credibility of the sender as perceived by the receiver. Other communication barriers can be associated with the choice of the channel (matching the medium to message goals) and a lack of feedback (the sender relies on feedback to judge the success of communication) [14].

Recently, there has been a marked increase in the interest in mentoring among academics and business leaders. This is evidenced by the number of articles on this subject, as well as the number of mentoring programs implemented in organizations [23], [38].

Mentoring was defined as a dyadic relationship between the mentor and the mentee. However, the definition of mentoring has evolved. Nowadays, mentoring usually includes a network of developers who provides support to a protégé [23]. A key element of mentoring is communication and the effective communication is a condition of the effective mentoring process [22]. The effectiveness of communication means that the goals set for the communication interaction are fulfilled [39].

The literature proves that researchers have not given enough attention to effectiveness of communication issues in the mentoring network yet. An exception is the works on communication in online mentoring [23], [40], [41], [42]. The paper contributes to fill in that loophole as it aims to identify factors influencing the effectiveness of communication in the mentoring process. The authors created a theoretical model of communication in the mentoring process which became a basis for primary research conducted among 103 mentors and 119 mentees in Poland. Next, the authors incorporated the Exploratory Factor Analysis (EFA) and Cronbach's alpha reliability test of different factors influencing the effectiveness of communication in the mentoring process.

2 Communication in mentoring

Communication is defined as a mechanism of mutual relations which lies at the core of establishing contacts as well as a set of all means and methods for transferring information in order to affect the behaviour of people [15].

The most common context of business and professional relationships is interpersonal communication which is defined as an interaction in which one person sends a message to another with the use of a specific communication channel [16]. Interpersonal communication skills are obviously a key to success in business [8].

Success in business depends on one's ability to communicate effectively, wherein effective communication combines verbal and non-verbal forms [8]. Verbal communication includes oral and written communication between people. It involves the use of words in speaking, writing, reading and listening [17, 8]. Visual and electronic channels of communication can complete the oral and written ones [18].

Any form of communication that does not specifically use words is considered non-verbal [19]. Kudesia and Elfenbein [19] list components of non-verbal communication from relevant literature. This list includes: appearance, movement, facial expressions, vocal behaviour, distance, touch and time.

Non-verbal "language" takes on a lot of important forms, such as: posture, manner of dress, accessories, gestures, eye contact, facial expressions, smile, voice intonation, laughter, eye contact, eye signs and movement, distance between communicators, touch, clap, dance and physiological reactions – sweating palms and/or forehead, paleness, at times acute facial and neck redness and other ones [20]. In a great variety of situations, communicators can achieve their purpose more easily by improving the accuracy and effectiveness of their non-verbal communication [21].

Communication models in the mentoring network have not drawn the attention of researchers yet. Mentoring can be defined as a strategy aimed at developing individuals, both in professional and personal aspects [22]. A mentor is a network participant who provides instrumental, psychosocial, and/or role-modelling support to a mentee on an ongoing basis [23]. In general, researchers have found that informal mentoring relationships based on a frequent contact are better than formal relationships, and having any mentor is usually better than not having one at all. Unfortunately, there are a number of barriers that prevent would-be mentees from finding a mentor. These obstructive factors include a lack of available mentors in a given industry, profession or echelon, increasing demands placed on would-be mentors, lack of similarity in the attitude or demography, and organizational or geographical boundaries [24, 25]. One way to overcome these constraints is to participate in mentoring through a variety of communication options. Communication is a very important element

of mentoring and effective communication is considered as a hallmark of an effective mentoring relationship [22].

The model of communication in mentoring should not only include proper communication channels and tools but, principally, create an appropriate content and consider social engagement levels.

The communication channel is characterized as a technical component of the communication process that allows to transmit information from sender to receiver (and vice versa). This kind of channel covers all means of message creation and acceptance (i.e. signs, language, body language, codes, technical devices, etc.) [43].

Stelzle and Noennig [26] distinguish five levels of social engagement:

- information – informing the public, supporting the understanding of the problem and suggesting solutions;
- consultation – including giving public feedback to the analysis and decisions;
- involvement – cooperating with the public in the course of the process and giving feedback on how the decision was influenced by public;
- collaboration – working together with the public on every aspect and including public advice and recommendations in the decision-making process to the maximum possible extent;
- empowerment – putting the final decision in the hands of the public.

In the mentoring process the first three levels of social engagement are important – information, consultation and involvement. The fourth level – collaboration – is understood by the authors of the concept as an element of social participation and – in the mentoring process – it comes down to the co-decision of a mentor and a mentee in terms of the mentee's personal and professional development.

As a result of the conducted literature analysis, the authors adopt the communication model presented in figure 1. It is based on the communication model between a small and medium-sized company and its clients using social media created by Ungerman and Myslivcová [27]. The below theoretical model became the core for developing the primary research tool and the model's components constituted the basis for creating a cafeteria of questions.

The entire model is based on continuous information circulation. The first stage involves selecting communication channels and tools by the mentor.

Content creation constitutes the second part of the communication model. Ungerman and Myslivcová [27] in their model emphasize two factors significant for content creation – a high-quality message and information content. The combination of all factors produced "content creation" subject to quality assessment.

Content quality consists of information veracity, information clarity, provision of solicited information only, information completeness regular updating and speed of response. At the same time, these attributes constitute a part of the entire model as well, since these principles apply to the whole communication process. Therefore, they serve as an intersection in the model's centre.

Social engagement constitutes the third part of the communication model. It basically supplements the message. At this point, the entire communication circle forms a closed continuum. However, the process does not end here. This communication model does not have a specified beginning either. Nor does it have an end. If communication is successful, it leads to the reciprocal contact between the mentor and the mentee. Such mutual communication serves as a basis for establishing a relationship in the mentoring process.
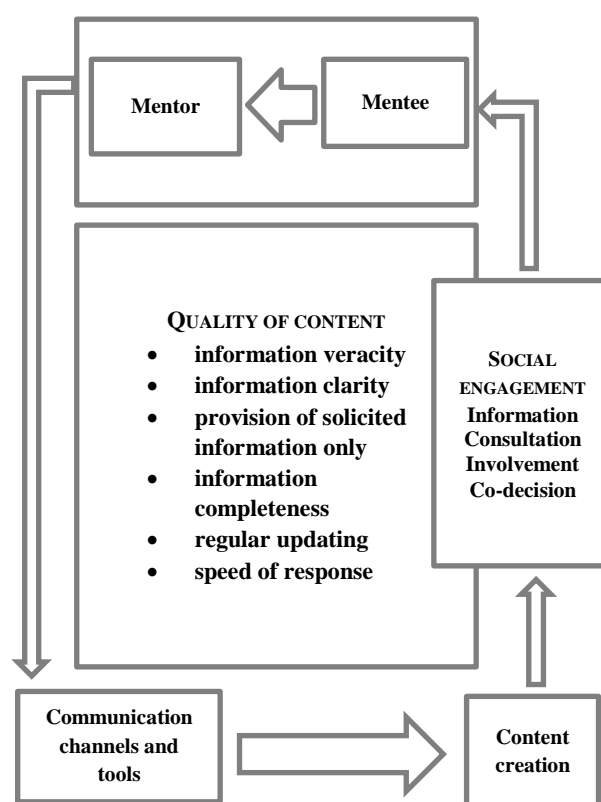
Fig. 1. Theoretical Model of Communication in Mentoring
Source: elaboration on the basis of [27].

It should be underlined that the above presented model extracts components of communication in mentoring, but the relationships between those components are not sufficiently identified.

3 Research Problem Formulation

As it was already mentioned, the communication model in the mentoring network has not been a subject of deepened analysis. In the literature, it is possible to identify theoretical concepts on communication models between enterprises and their clients, but not those for the mentor-mentee relationship. The theoretical model of communication in mentoring developed by the authors is based on the concepts of general communication models or business-consumers communication models. That is the reason for conducting the procedure of verifying the conceptual model and identifying factors which influence communication effectiveness in mentoring networks.

The theoretical model of communication in mentoring developed by the authors consists of three basic components such us: channels and tools of communication (oral, written and non-verbal), content creation (information veracity, information clarity, provision of solicited information only, information completeness regular updating and speed of response) as well as levels of social engagement in the mentoring process (information, consultation, involvement and co-decision).

Moreover, communication is considered effective when the assumed objectives are achieved, meaning that the content is understood, the message leads to a specific action, the decision is made about the issue, the goal of the meeting has been reached, the goal of the mentoring process has been achieved and emotional support is gained.

The study was constructed to answer the research question: *What are the factors determining the effectiveness of communication in the mentoring process?*

The authors implemented the below described research procedure to answer the research question and to identify the determinants of the effectiveness of communication in the mentoring process. Moreover, the theoretical model of communication in mentoring has been supplemented with an indication of the relationship between its components.

4 Method

The article involves exhaustive literature review. The aim was to identify factors influencing the effectiveness of communication in the mentoring
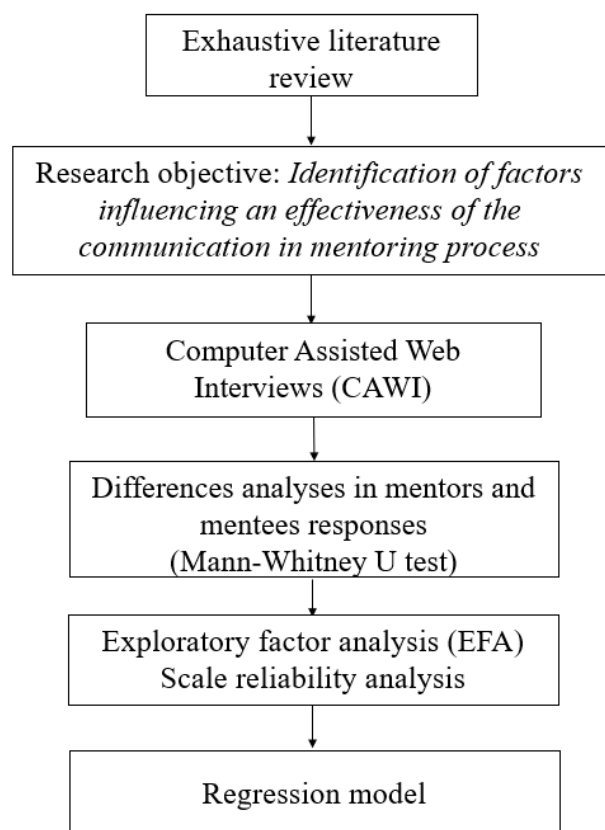
process (figure 2). The authors compiled a questionnaire which was developed on the basis of literature review (Appendix 1). The research constructs comprised of a total of 38 items (observable variables) were divided into six groups related to:

1. oral channels and tools of communication – 4 items;
2. written channels and tools of communication – 12 items;
3. non-verbal channels and tools of communication – 6 items;
4. content creation – 6 items;
5. social engagement in the mentoring process – 4 items;
6. effectiveness of communication – 6 items.

For evaluation of each item in the questionnaire a five-level scale from "very unimportant" (1) to "very important" (5) was used. The research was conducted in Poland using the CAWI technique (Computer Assisted Web Interviews).

The questionnaire was send to mentors who were qualified for the study in accordance with the adopted definition, in which the mentor is an experienced entrepreneur or manager who has accumulated knowledge in entrepreneurship, who, without consideration and willingly, devotes his time, experience and suggestions to help the new entrepreneur, who is oriented in the business environment. The mentor listens, asks questions, challenges the mentee's goals, studies, gives advises, shares his/her experience and contacts. The mentees were selected for the study by the mentors participating in CAWI who passed the questionnaire to the mentees they work with.

The sample was selected in quota-random way – it was assumed that the research sample should include at least 100 mentors and 100 mentees, having technical or non-technical background and representing main sectors of Polish economy – industry, construction, education, agriculture, trade and TSL. For mentors it was assumed that they should have in organization position of specialist or higher. As a result, the survey was carried out among 222 respondents, of whom 103 were mentors (46%) and 119 were mentees (54%) (table 1).

Fig. 2. Methodology adopted for the study
Source: own study.

Tab. 1. The structure of respondents

		Mentors	Mentee
Status		46,0%	54,0%
Sex	Female	49,0%	64,7%
	Male	51,0%	35.3%
Educational background	Technical	35.3%	48.7%
	Non-technical	64.7%	51.3%
Age	Below 30 years old	12.7%	77.3%
	30 – 40 years old	25.5%	14.3%
	41 – 50 years old	52.0%	6.7%
	51 – 60 years old	6.9%	0.8%
	61 and more years old	2.9%	0.8%
Working experience	At least 2 years	2.9%	62.2%
	3-5 years	12.7%	15.1%
	6-10 years	11.8%	10.1%
	11-15 years	7.8%	4.2%
	16 years and more	64.7%	8.4%
Position	Director	34.0%	-
	Senior manager	15.5%	-
	Manager	33.0%	-
	Specialist	17.5%	-
Sector	Industry	25.5%	-
	Construction	6.8%	-
	Agriculture	1.0%	-
	Trade	18.4%	-
	TSL	11.7%	-
	Education	8.1%	-
	Other	28.5%	-

Source: own study.

5 Results

The research was conducted on a sample of 222 respondents – mentors and mentees. At the first stage of the analysis the authors had to decide if the respondents' answers are the same for those two groups. In analysing differences of the mentors' and the mentees' responses the non-parametric Mann-Whitney U test was used.

In almost every case no statistically significant differences were found in the distribution of the mentors' and the mentees' responses. There was one exception related to non-verbal communication – posture and body orientation (U=4811.5, p<0.05). In all other cases statistic differences were not significant (p>0.05). Due to the lack of statistically significant differences in the distribution of the mentors' and the mentees' responses for other items, an assumption was made that the factors influencing the effectiveness of communication in the mentoring process are similar in both groups.

At the first step, the respondents were asked when they regard communication in the mentoring process as effective. The mentees found it comparatively important when the message leads to a specific action, the goal of the mentoring process has been reached, the goal of the meeting has been achieved, the content is understood and the decision is made about the issue (table 2). According to the

The sample size-number of variables ratio is almost 7:1, which meets the required recommendations for EFA [29]. Regression analysis required at least 15 respondents on one predictor [33] what is also fulfilled.

In the next step the differences in the mentors' and the mentees' responses were analysed using the Non-parametric Mann-Whitney U test. Next, the EFA and Cronbach's alpha (λ) reliability test of different factors influencing the effectiveness of communication in the mentoring process as well as the effectiveness itself were subject to elaboration.

At the final stage a regression model was developed.

Data analysis was based on the IBM SPSS Statistics 21.0 software.

respondents, gaining emotional support is relatively less important for the effectiveness of communication (EF) in the mentoring process.

Tab. 2. Effectiveness of communication

Item	Mean	Median	Mode	Cronbach's alpha (α)
Content is understood	4.45	5.0	5.0	
The message leads to a specific action	4.58	5.0	5.0	
Decision made about issue	4.38	4.0	5.0	
Goal of the meeting has been reached	4.49	5.0	5.0	0.75
Goal of the mentoring process has been reached	4.50	5.0	5.0	
Emotional support gained	3.85	4.0	4.0	

Source: own study.

The second part of the questionnaire was related to 32 elements influencing the effectiveness of communication. To identify the structure of data as well as reduce the number of variables and observable variables, the EFA was performed. The aim of EFA is to obtain a minimum number of factors that contain the maximum possible amount of information contained in the original variables used in the model and with the greatest possible reliability [28].

The Kaiser-Meyer-Olkin measure of sampling (KMO) adequacy was 0.76, indicating a good sample size – it is bigger than the suggested minimum values of 0.5 [30] and 0.6 [31] (table 3). Bartlett's test of sphericity was significant ($\chi^2 (190) = 2022.93$ $p < 0.001$), which indicates that the variables are correlated enough for the EFA analysis.

Tab. 3. KMO and Bartlett's test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.759
Bartlett's Test of Sphericity	Approx. Chi-Square	2022.926
	df	190
	Sig.	0,000

Source: own study.

The decision about number of factors which can be extracted was determined by using the Kaiser rule (retain only those factors with an eigenvalue larger than 1) and the Cattell method based on – a scree-plot analysis. The analysis was performed with Principal Axis Factoring as an extraction method and Varimax rotation. In the analysis six factors explaining 53.0% of total variance were extracted. The items with low loadings and high loadings on more than one factor were excluded and EFA was repeated. In the final solution the items with the factor loading higher than

0.45 were retained what is more than recommended – 0.40 [32]. For most of the items they are over or close to 0.6.

The final rotated factor matrix for EFA is presented in table 4. The use of EFA enabled the identification of six factors related to the effectiveness of communication in the mentoring process, namely:

1. Non-verbal channels and tools of communication (NW).
2. Social engagement in the mentoring process (SE).
3. Electronic (internal) channels and tools of communication (ECH).
4. Content creation (CON).
5. Written channels and tools of communication (WCH).
6. Oral channels and tools of communication (OCH).

Tab. 4. Factor loadings - EFA results

Factor					
1 NW	2 SE	3 ECH	4 CON	5 WCH	6 OCH
0.79					
0.75					
0.62					
0.61					
0.56					
	0.95				
	0.94				
	0.46				
		0.84			
		0.69			
		0.62			
		0.52			
			0.74		
			0.62		
			0.49		
				0.69	
				0.54	
				0.51	
					0.72
					0.65

Extraction Method: Principal Axis Factoring.
Rotation Method: Varimax with Kaiser Normalization.

Source: own study.

The first factor explains 23.1% of the variance of these variables, which confirms a large significance of non-verbal elements of communication. The next ones range from 8.7% to 3.4%.

The reliability analysis for each extracted factor was made using Cronbach's α (table 5). In all cases Cronbach's α is higher than desirable value of 0.60-

0.70 [32] and is acceptable especially for social science research [37].

Tab. 5. Reliability analysis

Factor	Item	Cronbach's alpha (α)
Non-verbal channels and tools (NW)	Look and eye contact Gestures Posture and body orientation Voice intonation Facial expressions	α = 0.81
Electronic (internal) channels and tools (ECH)	Document sharing software Internal podcasts Internal social media Internal communication platforms	α = 0.79
Content creation (CON)	Information completeness Provision of solicited information only Information regular updating	α = 0.70
Written channels and tools (WCH)	Written letter and memos Presentations Manuals	α = 0.63
Social engagement (SE)	Information Co-decision Consulting	α = 0.86
Oral channels and tools (OCH)	Phone call Face to face group meeting	α = 0.69

Source: own study

The authors performed hierarchical regression analysis, where the dependent variable was effectiveness in the mentoring process. The factors obtained as the result of EFA analysis were used as a predictors in this regression analysis. In table 6 descriptive statistics (means, standard deviations (SD)) and correlations of all variables are provided.

The Variance Inflation Factors (VIF) test was performed on each regression. The VIF values are below 2, so well below accepted 5 [37] or 10 [33] suggesting that multicollinearity is not a problem. Before testing the moderating effects, variables were mean-centred.

In the table 7 the results of regression analysis are presented. The model I includes all predictors: NW, SE, ECH, CON, WCH, OCH and control variables: sex, educational background and working experience (age was excluded as highly correlated with working experience). The model II includes interaction between SE and other variables, The model III adds interaction between CON and other variables. The model IV takes into account interaction between different channels and tools of communication (NW, ECH, WCH, OCH) and other variables and the model V is a full model where all the variables and moderations effects are tested. In the model V two-way and three-way (relating to channels and tools of communication) interactions were included.

Tab. 6. Descriptive statistics (means, standard deviations) and correlations

Variable	Mean	SD	WCH	SE	OCH	NW	ECH	CON	EF
WCH	3.99	0.64	1.00						
SE	4.58	0.52	0.19**	1.00					
OCH	3.77	0.67	0.09	0.16*	1.00				
NW	4.27	0.55	0.10	0.26**	0.25**	1.00			
ECH	3.35	0.80	0.26**	0.19**	0.34**	0.26**	1.00		
CON	4.45	0.50	0.23**	0.36**	0.15*	0.27**	0.23**	1.00	
EF	4.51	0.49	0.19**	0.30**	0.24**	0.27**	0.11	0.25**	1.00

Note: *p<0.05; **p<0.01

Source: own study.

Tab. 7. Results of hierarchical regression analysis

Variables	Model I β	Model I t	Model II β	Model II t	Model III β	Model III t	Model IV β	Model IV t	Model V β	Model V t
Sex	0.090	1.354	0.073	1.158	0.075	1.165	0.073	1.139	0.079	1.240
Educational background	0.065	0.989	0.089	1.423	0.084	1.338	0.094	1.499	0.084	1.345
Working experience	-0.039	-0.613	-0.073	-1.201	-0.092	-1.503	-0.078	-1.275	-0.096	-1.561
NW	**0.162***	2.390	**0.137***	2.051	**0.146***	2.193	**0.190****	2.851	**0.211****	3.124
ECH	-0.071	-1.014	-0.051	-0.772	-0.020	-0.301	-0.062	-0.897	-0.006	-0.078
CON	0.107	1.530	0.106	1.575	0.118	1.652	0.131	1.844	0.121	1.691
WCH	**0.133***	1.999	**0.149***	2.176	**0.136***	1.965	**0.146***	2.054	**0.191***	2.478
SE	**0.200****	2.904	**0.205****	2.693	**0.202***	2.595	**0.189***	2.428	**0.169***	2.163
OCH	**0.175***	2.575	**0.178****	2.689	**0.165***	2.494	**0.148***	2.244	**0.164***	2.456
SE*OCH			0.002	0.033	0.001	0.018	0.066	0.832	0.078	0.988
SE*ECH			**0.306****	3.776	**0.319***	3.740	**0.267****	3.019	**0.270****	3.035
SE*WCH			-0.130	-1.645	**-0.179***	-2.205	**-0.169***	-2.085	**-0.158***	-1.930
SE*NW			-0.118	-1.786	-0.098	-1.204	-0.066	-0.810	-0.040	-0.490
CON*SE			0.035	0.397	0.031	0.338	-0.007	-0.072	-0.062	-0.617
CON*ECH					-0.097	-1.175	**-0.178***	-2.022	-0.154	-1.696
CON*OCH					0.034	0.479	0.125	1.643	0.128	1.678
CON*WCH					**0.205****	2.708	**0.167***	2.066	0.157	1.835
CON*NW					-0.057	-0.664	-0.034	-0.367	-0.055	-0.600
OCH*NW							**-0.182***	-2.450	**-0.204****	-2.684
OCH*ECH							-0.062	-0.829	-0.037	-0.471
OCH*WCH							0.028	0.396	-0.005	-0.068
WCH*ECH							**0.183***	2.120	**0.208****	2.352
WCH*NW							-0.068	-0.799	-0.102	-1.134
ECH*NW							0.126	1.794	0.116	1.660
OCH*WCH*NW									0.130	1.369
ECH*WCH*OCH									-0.125	-1.413
WCH*ECH*NW									-0.120	-1.535

Notes: Dependent Variable: EF; *p<0,05; **p<0.01

Source: own study.

All the proposed regression models suited to the data well (explain more of the variability of the dependent variable than the arithmetic mean) (table 8). However, the model IV should be selected as it accounts for 36% of the variability of the dependent variable, and it is simpler than the model V. In the model V $\Delta R^2=0.02$ and is not significant ($F(3,193)=1.86$; $p>0.05$).

Tab. 8. Models Summary

Model	R	R^2	ΔR^2	F
Model I	0.437	0.191	0.191**	5.528**
Model II	0.535	0.286	0.096**	5.906**
Model III	0.559	0.312	0.026	5.091**
Model IV	0.597	0.357	0.044**	4.525**
Model V	0.612	0.375	0.018	4.525**

Notes: **p<0.001

Source: own study.

Based on regression coefficients, it can be concluded that the effectiveness of communication is determined by: NW (β=0.19, p<0.01), WCH (β=0.15, p<0.05), SE (β=0.19, p<0.05) and OCH (β=0.15, p<0.05). The model IV suggests also interactions between: SE and ECH (β=0.27, p<0.01), CON and WCH (β=0.17, p<0.05) and WCH and ECH (β=0.18,

p<0.05), which are positively related to EF. Negatively related to EF are effects of SE and WCH (β=-0.17, p<0.05), CON and ECH (β=-0.18, p<0.05) as well as OCH and NW (β=-0.18, p<0.05).

6 Discussion

The paper aims to identify factors influencing the effectiveness of communication in the mentoring process. The research indicates that the effectiveness of communication in the mentoring process is positively and directly influenced by non-verbal channels and tools of communication, written and oral channels and tools of communication as well as social engagement in the mentoring process. The influence of the choice of communication channels on the effectiveness of the communication process was emphasized also by Sanina et al. [43]. Additionally in our study, interactions between social engagement, content creation and different channels and tools of communication are observed.

As in literature researchers have not given enough attention to models of communication in the mentoring network yet, the authors adopted the communication model between a small and medium-sized company and its clients using social media

created by Ungerman and Myslivcová [27]. However, the obtained results differ in terms of the ones reached by Ungerman and Myslivcová [27], who also applied factor analysis to identify the spheres of resulting factors in their communication model between a small and medium-sized company and its clients using social media. The factors identified by Ungerman and Myslivcová were information quality, communication tools and contents as well as methods of providing information.

In literature the effectiveness of communication in the business networks is understood as the relationship between the given communication goals and real impacts on business results, i.e., the ratio of desired and achieved [34]. As a measure of evaluation of the effectiveness of communication, the return on investment (ROI) indicator is mainly used [34, 35].

The vast majority of research on communication effectiveness concerns marketing communication [36] and there is a lack of research on the communication effectiveness in the mentoring networks.

7 Conclusion

In the described study the authors made an analysis of the determinants of effectiveness in the mentoring process. They took into account the channels and tools of communication, content creation and levels of social engagement.

The authors contribution beyond alternative studies is on the one hand to work out the procedure of evaluation of the effectiveness of communication and on the other hand to identify factors influencing the effectiveness of communication in the mentoring process.

Concluding the research findings, it can be stated that one conceptual model of communication in the mentoring network can be used for both mentors and mentees.

The authors performed hierarchical regression analysis, where the dependent variable was the effectiveness in the mentoring process. As the predictors in this regression analysis the factors obtained as the result of EFA analysis were used. The research results proved that the factors influencing the effectiveness of communication in the mentoring process are: non-verbal channels and tools of communication, written and oral channels and tools of communication as well as social engagement in the mentoring process.

Moreover, alternative models were tested to analyse the structure of relationships between the predictors and the dependent variable. It occurred that the interactions are noticed what means that the effectiveness of communication in the mentoring process is influenced by: social engagement which is impacted by electronic channels usage; content creation that is increased by the use of written channels and tools of communication and written channels and tools of communication that is higher when used with electronic channels and tools of communication. However, the effectiveness of communication is decreased when: written channels and tools of communication are used in social engagement process, when electronic channels and tools of communication are used in content creation and when non-verbal communication influences oral channel usage.

The research results included in this study have some limitations. They concern the size of the research sample and the fact that they were conducted only in Poland. It needs to be highlighted that the study has an exploratory character. The regression analysis results indicate that in the model a series of interactive components had to be created which complicates the model. Also, for this reason, the moderating effects analysis was abandoned. The study does not give the answer about substitutive or complementary relations between variables. Further analyses should be conducted to explain the interaction effects. At the following stages of research work, it is also planned to perform quantitative research in other countries. The obtained research findings for Polish mentoring network can be the basis for conducting comparative analysis with other countries. Moreover, the results can be a basis for further research by using structural equation modelling. Structural equation modelling requires a larger research sample but a more detailed model can be developed to estimate direct and indirect, moderating and mediating relationships among variables.

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Appendix 1

Communication model elements

Oral channels and tools of communication
Face to face conversation
Face to face group meeting
Phone call
Video or audioconference
Written channels and tools of communication
Written letter and memos
Reports
Presentations
Manuals
Notices and announcements
E-mail
Newsletter
Internal communication platforms
Document sharing software
Internal podcasts
Internal social media
Blog
Non-verbal
Facial expressions
Look and eye contact
Gestures
Posture and body orientation
Voice intonation
Physical distance
Content creation
Information veracity
Information clarity
Provision of solicited information only
Information completeness
Information regular updating
Speed of response

Social engagement
Information
Consulting
Engagement
Co-decision
Effectiveness of communication
Content is understood
The message leads to a specific action
Decision made about issue
Goal of the meeting has been reached
Goal of the mentoring process has been reached
Emotional support gained

Source: own study.

Contribution of individual authors to the creation of a scientific article (ghostwriting policy)

Ewa Rollnik-Sadowska, Ewa Glińska, carried out the literature analysis, wrote the introduction, discussion, conclusions and the theoretical part. Urszula Ryciuk was responsible for conducting the statistics analysis, results and conclusions.

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