Better Ideation Task Results in Web-based Idea Management Systems

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INTRODUCTION

Abstract: Web-based idea management systems (IMS) has helped many organisations to build virus-resistant creativity processes in organisations. These systems provides systematical and manageable idea generation and evaluation in virtual environment. IMS are used by many well-known organizations in various industries, for example, Etsy, Panasonic, Sony, Electrolux and Volvo. There are researchers that aims to carry out research on separate functions of IMS and creation of IMS classifications. Authors based on the ideas divides all IMS application cases as follows:

•   internal IMS by involvement internal idea creators and evaluators;

•   external IMS by involvement external idea creators and evaluators;

•   mixed IMS by involvement internal and external idea creators and evaluators.

Based on the application focus all systems could be divided as "active" and "passive", therefore, there are passive and active IMS. Passive IMS collect all ideas in an unfocused, but active IMS provide functions to collect ideas in focused manner and in most cases includes idea evaluation possibilities (Mikelsone et al., 2020).

 But there is identified the research gap – what kind of ideation tasks creates the best idea quality and quantity. Aim of the research: to identify how different ideation task elements influence idea quality and quantity. Methods to fill the research gap: (1) literature review (data collection: systematically data collection from scientific data bases; data analysis: content analysis); (2) global survey of n>500 enterprises with web-based IMS experience (data collection: survey; data analysis: statistics).

Key words : Idea management systems, Results, Entrepreneurship, Innovation, Management, Ideation, Web-based

RESULTS

ASSESSMENT OF THE IMPACT ON THE NUMBER OF IDEAS CREATED

As shown in Table 1, the number of tasks conducted forms both positive associations (as the number of tasks increases there is a upward trend in the number of ideas created), such as external, mixed and active IMS, and negative associations (as the number of tasks increases there is a downward trend in the number of ideas created), such as passive IMS. For internal IMS Spearman rho is not statistically significant.

The associations of task duration with the number of created ideas are also both positive, eg, for passive IVS, and negative, eg, for mixed and active IMS. But for internal and external IMS Spearman rho is not statistically significant.

The amount of radical innovation has a mostly positive effect on the number of created ideas - only for passive IMS it is negative. In addition, all coefficients are statistically significant.

The amount of incremental innovation has a positive effect on the number of generated ideas in internal, mixed and active IMS, negative - in passive IMS, but for the external IMS Spearman rho is not statistically significant.

ASSESSMENT OF THE IMPACT ON THE NUMBER OF SELECTED IDEAS

As shown in Table 1, the number of tasks conducted forms both positive associations (increasing number of tasks tends to increase the number of selected ideas), such as internal and active IMS, and negative associations (increasing number of tasks tends to decrease the number of ideas selected), such as passive IMS. For the external IMS Spearman rho is not statistically significant, but mixed IMS positive associations should be treated with caution, taking into account the probability of error (p = 0.068).

Task duration associations with the number of selected ideas are negative, eg for mixed and active IMS. But for internal, external and passive IMS rho is not statistically significant.

The amount of radical innovation has a mostly positive effect on the number of selected ideas - only for passive IMS it is negative. In addition, all coefficients are statistically significant, except for external IMS.

The amount of incremental innovation has a positive effect on the number of selected ideas in internal, external, mixed and active IMS, but the passive IMS Spearman rho is not statistically significant.

Taking into account the absolute values of Spearman rho, it must be concluded that the associations are mostly weak - only the effects of the amount of radical innovations exceed 0.3.

METHODOLOGY

DATA COLLECTION

To collect the data the global survey for enterprises with a web-based IMS experience was created. Survey was created based on the Adaptive Structuration Theory, to evaluate web-based IMS in 8 different blocks. In this paper authors analyse the relations between two of these blocks- IMS application types and benefits related with creativity. This survey was based on the research conducted by the authors .

The survey was distributed to more than 100 web-based IMS developers that distributed that to their clients (enterprises that apply web-based IMS). Researchers received 400 responses from all over the world from different sizes companies, with different IMS experiences- so it allows to create holistic view of the research question.

DATA ANALYSIS

The following factors were used in the analysis of correlations:

- number of tasks conducted;

- average length of tasks;

- the extent of radical innovation ideas generation;

- the extent of incremental innovation ideas generation.

The influence of factors was evaluated on the following dependent variables:

- number of ideas created;

- number of ideas selected.

Types of idea management systems used by companies;

- Internal

- External

- Mixed

- Active

- Passive

As the survey data were compiled using the Likert scale, Spearman *rho* was used to assess the associations between factors (Myers, Well, & Lorch, 2010). Calculations where done using R version 4.0.5 (R Core Team, 2021). The following Table 1 summarizes the results of the analysis by IMS types and factors included in the study using the R function "cor.test".

CONCLUSION, CONTRIBUTION AND NOVELTY

Results: (1) study provides results about correlations between number of created ideation tasks and idea quality and quantity; (2) study identify how results are impacted by duration of ideation tasks; (3) study provides analysis about different ideation task types and their impact on results.

This research fulfils an identified need to clarify IMS types and their impact on the results. This research delivers the following academical contribution: (1) it is the widest web-based IMS empirical research based on the survey; (2) approbated classifications of IMS; (3) it researches different classifications of IMS and their impact on idea quantity, idea quality.

The practical contribution of research results helps to understand what kind of the results enterprises could expect from different IMS application types. Research results highlight the benefits/implications of adopting different types of IMS for organizations. These contributions also provide managers with a richer set of theoretical tools, making them make better decisions regarding selection of IMS that are the best for the achieving the results in given context. Web-based IMS types and its impact on the IMS results could help to overlook the potential application of these systems in different application scenarios

IC&IS	IMS type	Tasks		Duration		Radical innovation		Incremental innovation	
		rho	Signif.	rho	Signif.	rho	Signif.	rho	Signif.
Ideas created	Internal	-0.022	0.629	-0.061	0.173	0.193	<0.001	0.105	0.019
	External	0.122	0.006	0.063	0.161	0.195	<0.001	-0.039	0.389
	Mixed	0.156	<0.001	-0.124	0.005	0.306	<0.001	0.264	<0.001
	Active	0.223	<0.001	-0.114	0.010	0.340	<0.001	0.259	<0.001
	Passive	-0.172	<0.001	0.140	0.002	-0.142	0.000	-0.206	<0.001
Ideas selected	Internal	0.159	<0.001	0.036	0.423	0.290	<0.001	0.132	0.003
	External	-0.045	0.311	0.001	0.990	0.034	0.453	0.102	0.022
	Mixed	0.081	0.068	-0.118	0.008	0.327	<0.001	0.320	<0.001
	Active	0.220	<0.001	-0.117	0.009	0.412	<0.001	0.357	<0.001
	Passive	-0.312	<0.001	0.017	0.699	-0.197	<0.001	-0.006	0.890

Table 1. Spearman's *rho* and significance levels. Source: Created by authors

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Acnowledgements