Motivation to E-Learn Within Organizational Settings: What is it and how could it be Measured?

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ABSTRACT

E-Learning is expected to support organizations in being more adaptable and competitive, and individuals in becoming or staying more employable. However, current acceptance levels do not show expected results. In this paper, we explored, within a defined e-learning framework, the content of a variable called "motivation-to-elearn" associated to the concept of "just-in-time learning". Since learning results are generally associated to changes in attitudes, behaviours and/or individual cognitive maps and are a base for performance and knowledge generation, understanding the nature of motivation to e-learn is relevant to define proper strategies to help performance levels across different learners' groups. This is a step towards improving e-learning dynamics and its acceptance levels within organizational settings.

INTRODUCTION

Motivation is an individual variable which is both influenced by context and shaped by internal factors such as beliefs, values, goals, aspirations, desires, expectations, priorities and preferences among others. Understanding how motivation is affected during the learning process is critical to improve system's acceptance behaviours, and consequently to increase learning effectiveness. In this way, organizations could be more effective in creating the conditions to foster knowledge acquisition, transference and reutilization, across learners' groups. Such efforts can be crucial in both gaining and sustaining competitive advantages in a cost-effective manner. The main objective of this article is to define a scale to measure motivation-to-elearn (MeL) within organizational context. To do so, we propose a theoretical framework to support proposed scale derivation from reviewed literature. Our main contribution is to offer organizations a holistic view about MeL to assist gradually the adoption of e-learning, as this new learning paradigm gets progressively immersed into people's process-based roles.

THEORETICAL FRAMEWORK

e-learning is a perceived tool to achieve context-specific, work-related and "just-in-time" training. However, current results have not show up the expected benefits fully [9,10]. We believe that courseware taking into consideration individual-related key variables and context-related options would enhance interactions with e-learners. Within organizational settings, Courseware reflects strategic options regarding skill development. As can be seen in Figure 1, the external and internal fit among organizational macro-level key variables affects people's perceptions and, in turn, motivation to engage and perform tasks [4,6]. Learning takes place within immediate work context. In other words, a good external and internal fit could translate into organizational initiatives supporting implementation of the e-learning strategies
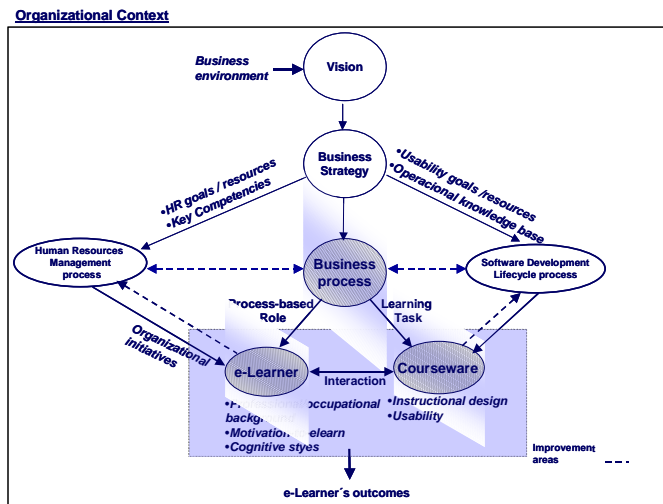
across units and workgroups and consequently learners' performance. Examples of such organizational initiatives, among others, are: (a) investment in proper technical resources to deploy defined e-learning strategies at a specific quality of service level; (b) identification and rewarding expert's involvement in courseware development, (c) adequating learning methodology to support work and context-related organizational training needs across targets, (d) giving adequate access to organisational online resources; (e) implementing orientation programs to stimulate and monitor e-learning usage, (f) developing coaching programs; (g) fostering managerial support at workgroup level, and (h) defining Human Resources policies to adequate work organization to business needs and foster key competency development areas through e-learning.

Based upon the reviewed literature [1,2,3,7,8,9] some of these individual-related key variables composing user profile are professional/occupational background, motivation-to-elearn and cognitive styles. Professional/occupational background relates to process-based role and acts as a criterion to select role's incumbents reflecting work and life experience, educational background and current competency level. Cognitive style or individual information processing style is an important variable to courseware design in order to: (a) diminish cognitive overloading [3] and (b) facilitate navigation through defined information ontology [1]. Motivation-to-elearn (MeL) is not specifically defined within e-learning processes. For the purpose of this study, MeL is an individual variable composed of an internal set of processes (both cognitive and behavioral) by which human energy becomes focused on learning a particular piece of work-related content online (whether it be by actively interacting with courseware, participating in a virtual class, self-studying, doing e-homework alone or in group) to achieve specific learning goals, assessed using internal success criteria [1,6,8]

MOTIVATION-TO-ELEARN KEY ISSUES

MeL's definition is twofold. First, the internal set of processes by which human energy becomes focused on something describes the agentic nature of individuals in interaction with their environment. Human agency theory states that people are agents when they act on the environment and objects when they reflect and act on themselves [1]. When people learn, as an option to improve their competency level, and increase their likelihood to get immediate or long-term rewards, they are acting upon themselves and eventually on their immediate environment. For instance, when people, as users, iterate with development teams and their recommendations impact system's usability, there are acting as agents improving the quality of their interactions with systems. This involvement level could contribute to form their perceptions on

Figure 1: Theoretical framework

Table 1: Types of motives to e-learn

Type	Motives
Individual-related	eLearning usefulness to my work
	eL' contribution to my competence development
	Previous experience with eL
	eL as practical option to learn
	eL contribution to personal satisfaction
	Usage of own equipment when elearning
Work Context	eL-strategy fit
	eL-policy fit
	eL-HR process fit
	Internal communication on eL
	Accessibility & availability of eL resources
	Direct supervisor's support
	Others' experience with eL

system's easiness-of-use and usefulness as working instruments to perform their tasks or achieve their goals, which, in turn, would positively impact system's acceptance level [7,10].

A second relevant aspect of motivation is the direction of effort, which implies individual goal-orientation at internally defined level of success. This aspect reveals two motivational dimensions. First, motivation is intrinsically driven. Individuals define internal goals and form a related level of success based upon internal conditions (e.g. beliefs, desires, aspirations, state-of-minds, etc.). An internal goal with an associated level of success sets up a performance-level to achieve when doing any tasks or taking up any endeavour within a defined period of time. Second, motivation is also extrinsically affected by external events (e.g. resource availability, leadership style, challenging tasks, task variety, career opportunities, etc.) [6]. For instance, within an e-learning environment, if users think that courseware closely related to their learning needs or interests being work and context-specific, they would try to focus their efforts on e-learning till satisfying their quest taking into consideration current priorities, other competing tasks and perceived benefits from acquiring that knowledge and applying it to current work tasks. If, additionally, there is a perceived consistent link between current effort and context-related benefit (e.g. career-related opportunities), then learning outcomes would likely be positive for both parties. At this point, how to measure motivation-to-learn is in order to have some diagnostic tool for organizations to define specific interventions and timely contribute to positive learning outcomes giving the "motives" to e-learn.

Based upon reviewed literature [2],[3],[6],[8],[9], some key motivation-related items were identified. Table 1 shows those items, which were classified into two types: individual-related items (6), and work context-related items (7). These items composed our proposed scale to measure motivation-to-elearn. Next, some details on testing this scale are briefly described.

METHODOLOGY OF STUDY

We carried out an exploratory study to test this proposed scale. To this end, we prepared a questionnaire wording each of the identified item. Two people (Human Resources staff), who did not participate in the study, validated the questionnaire for wording.

A small group of potential e-learners (seven) were asked to participate in this study at a given week. Participants were chosen because of their familiarity with web usability and training professional fields, and were available when this study was carried out. All participants were Portuguese, ranging in age 21-40, with a university degree, frequent-users of computers (at least once a day, at least one hour each time) and Internet, that they accessed using either personal or employers' equipments. Four (57%) participants work in Software Engineering, and the remaining in Management and Training professional areas, with

tenure ranging between three to eight years. Five (71%) work for the same organization. All occupy tactical-operational job positions. Only one had received formal Internet training, four years ago. None knew the assessed online courseware before the study. On average, they spent 43 minutes in this study, dedicating, on average, 32 minutes to complete the assigned online learning task.

Each participant was instructed to complete an online lesson, for at least 20 minutes, and take its associated exercise or quiz, before completing the questionnaire. The chosen online lesson was written in English and described the basics of Internet. At the time of this writing, a well-known professional association offered this online lesson.

We observed each participant interact with the chosen courseware package to map online learning process and identify improvement areas. After completing the online lesson, subjects were asked to fill in the questionnaire to provide: (a) some identification data,(b) the most important motives for them to e-learn, and(c)other motives important to them that were not included in the questionnaire. To get items prioritized, participants were asked to select the most important items to them and later assign to the chosen items percentage figure indicating how important that item was for them as a personal motive to use e-learning. To facilitate answers an example was given in the same page to minimize misunderstandings. The total sum of chosen items had to equal 100%.

PRELIMINARY RESULTS

Results are shown in Figure 2. On average, there might be inferred that individual-related motives are stronger than work-context motives to e-learn. "*e-learning's usefulness to my work*" and "*e-learning as practical option to e-learn*" were ranked as equally important followed by "*e-Learning's contribution to personal satisfaction*" and "*Usage of own equipment when elearning*". Participants identified two additional items: (a) "*No need for commuting to access learning content*" and (b) "*Price in comparison with traditional training*". These six motives may suggest "e-learning convenience" to meet immediate learning goals. "*e-Learning's contribution to competence development*" as long-term consequence was ranked of moderate importance. "*Previous experience with e-learning*" was ranked as the lowest motive to e-learn. Mostly, these items mostly relate to the intrinsic nature of MeL.

Regarding work-related motives to e-learn, on average, "*Accessibility and availability of e-learning resources*" was ranked as the highest

Figure 2: Preliminary results

862 2004 IRMA International Conference
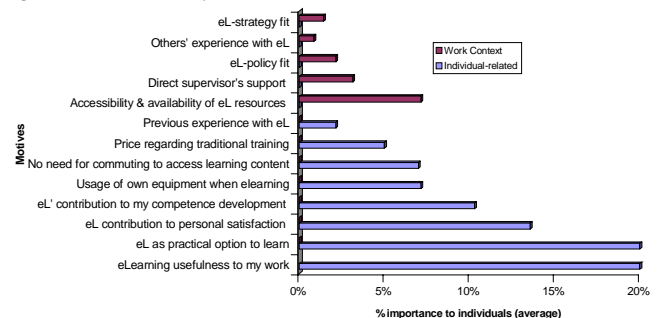
motive followed by "*Direct supervisor's support*". Current mechanisms supporting information sharing at operational level and supervisors' support to use them may explain these rankings. Two motives got no importance at all as motives to e-learn. They were "*e-learning-HR process fit*" and "*Internal communication on e-learning*". Both are work-context related. A plausible explanation for these low-importance rankings could be that e-learning is not an option in the current participants' work setting yet. This could be translated into a low context's strategy-process-technology fit at macro-organizational level.

DISCUSSION

As previously mentioned, our goal was to explore the key aspects of a proposed scale to measure motivation-to-elearn. Since structure drives behaviour, preliminary results may indicate that if learners perceived that courseware is context-related or fulfils a particular work-related goal, they may engage and put the necessary effort to achieve expected outcomes [6]. This could take place at the micro-organizational level or user's immediate work context. At this level, courseware usability turns to be instrumental to facilitate or constrain learning outcomes, namely performance and satisfaction during interactions.

Given the existence of individual-related motives, available online learning resources and direct supervisor's support were ranked as the most important work-context items. This may suggest the importance of having a consistent link between e-learning resources, individual learning goals and job objectives, as a precondition to successful e-learning initiatives taking into accounts the specifics of user categories.

For instance, participant' behaviour during interactions with courseware showed that the largest problems arise at the very beginning and can be summarized as connectivity and learner's equipment capabilities. If there is no Internet connection available at their organization or no easy access to courseware, simply there is no basic condition for interaction. If these problems are solved, prior knowledge and perceived usability become the critical factors for user engagement, unless learners, as the participants of this study, are frequent-Internet users. During learning process, perceived usefulness and organizational support (e.g. orientation sessions, coaching programs, allocated resources, technical infrastructure and assistance, among others) are relevant to keep up effort towards the defined goal. At the end of learning, feedback and sense of learning goal's achievement is important for building confidence for future skill acquisition through e-learning, and consequently in forming new related habits. Throughout the process, motivation to e-learn captures the impact of any event that may take place in surrounding work environment.

These preliminary results seem to couples social and personal aspects of e-learning. Indeed, IS researchers have been trying for some time to explain technology acceptance and usage both in terms of perceived ease-of-use and usefulness as technology attributes. Furthermore, soft-variables such as social influence and psychological attachment have emerged as important theoretical constructs for technology acceptance [10]. At this regard, social and cultural context of organizations might be a variable to account for in assessing learning outcomes as well as business sector, regions, cultures or national contexts through their specific e-learning strategies and policies.

LESSONS LEARNT

Regarding e-learners' motivation, two elements were noticed. First, at the very beginning of the learning process, the role of a planned and structured experience seems to be critical for the effectiveness of the process. Therefore, specific knowledge of learner group and expected performance levels at the different stages of the learning process is relevant for managing learners' expectations, individual formation of learning goals, and degree of human support; thus, contributing to lowering dropping rate.

A second lesson learnt relates to a major usage of simulation or role-playing techniques to approach the application of user-centred design principles across work-related contexts or cultures. This may allow development teams to manage sensitive data across user groups, especially those that are physically impaired or potentially info-excluded with minor negative impact on motivation to engage into e-learning experiences.

CONCLUSIONS AND FUTURE WORK

To conclude and as a matter for further reflection, the fact that "*Usefulness for my work*" ranked as one of the most important individual-related motive to e-learn brings out the issue of organizing work taking learning as one of the key activities to be performed within process-based role. Indeed, creating a specific set of work context's conditions to foster cost-effective e-learning becomes a increasing challenge to stay competitive. This is a demanding task for organizations that require a stronger internal fit among strategy and work processes. However, that organizational effort may ease the path for monitoring, improving, transferring and re-utilizing knowledge in very operational terms.

While the conclusions of testing this scale are preliminary, this piece of work comes as a first attempt to structure and measure the motivation-to-elearn component of a "learner profile"'. More in-depth studies are clearly needed to firmly establish and validate our proposed scale with larger and diverse samples. A next step is to fine-tune this scale in order to quantitatively analysing its role during the e-learning experience.

REFERENCES

1. A. Bandura. The exercise of Self-Control. W.H. Freeman and Company, 1997.

2. A. Dix, J. Finlay, G. Abowd, and R. Beale. Human Computer Interaction. Prentice Hall Europe, Second edition, 1998.

3. C. Shih and J. Gamon. *Student Learning Styles, Motivation, Motivation, Learning Strategies and Achievement in Web-based Courses*. Department of Curriculum and

   Instruction. Iowa State University, 1999.

4. J. Walker. Human Resources Strategy. USA: McGraw-Hill Series in management (Original work published 1980), 1992.

5. M.A. Rentroia-Bonito and J. Jorge. An Integrated Courseware Usability Evaluation Method. Proceedings of the 7th International Conference (Part II), Knowledge-based Engineering, Oxford, UK, September 3-5, 2003.

6. O. Organ and T. Bateman. Organizational behaviour. Irwin (Original work published 1978), Forth edition, 1991.

7. T. Stteheimer and A. Cleveland. *Modeling utilization of Planned Information Technology*. University of North Texas, 1998.

8. T. Welbourne, T.; S. Andrews and A. Andrews. *Back to basics: Learning about energy and motivation from running on my treadmill*. Retrieved Sept 2001 on the World Wide Web: http://www.eepulse.com/pdfs/treadmill%20adobe%203.1.01.pdf.

9. T. Wentling, C. Waight, J. Gallager, J. La Fleur, C. Wang and A. Kanfer. *E-Learning - A review of Literature*. University of Illinois, Urbana-Champaign, 2000.

10. Y. Malhotra and D. Galletta. *Extending the technology acceptance model to account for social influence: Theoretical bases & empirical validation*. Proceedings of the 32nd Hawaii International Conference on System Sciences. 1999.

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