**18. Investing in new technology: guidelines for how to do it right - or to understand what went wrong**

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This chapter provides guidelines, or statements to consider, when investing in new technology. These questions are meant to aid the organization in the process towards technology that are effective, efficient and accepted from a user perspective. The guideline can also be used as a diagnostic tool to find out what went wrong if an investment fails to meet its promises.

Although the intention (often) is good when introducing new technology in an organization, there is no guarantee that the intended users will accept and use the technology. Further, even though the technology is “right,” people might not accept it (Zweig & Webster, 2002). Hence, the technology must be complemented with human factors/social factors/psychological barriers… The best way to achieve a successful implementation of new technology is of course to proactively avoid making mistakes that can be thought of beforehand.

Based on research introduced in previous chapters (see for example chapter x and x) and on our experiences from the SIMS project and other similar projects, we have created a guideline consisting of questions that are good to consider before implementing new technology in order to attain acceptance. The questions are organized around the different aspects that they are supposed to consider.

Clear vision

* What is the purpose of implementing the new technology?
* What are the goals with the new technology?
* Is the purpose and goals clear for the employees?
* Can the new technology have consequences for other parts of the organization?

Of course, the purpose for implementing new technology should be known and well thought-out, however a clear vision and intended goals should be formulated (Beer 1988, read in Hughes, Ginnett, & Curphy, 2015). The vision and goals must also be communicated to all employees that are affected by the new technology. Hence, the organization must be able to justify and give a legitimate reason for why implementing the technology. One also needs to think about how changes in one system can affect other parts of the organization.

Perceived usefulness (Performance expectancy)

* Will the new technology make it easier to do a good job?
* Will the new technology make it easier to accomplish tasks more quickly?
* Will the new technology improve safety at work?
* Overall, is the technology perceived as useful?

The purpose for implementing new technology may of course vary, however it is important to make sure that the workers see the usefulness with the technology to attain acceptance (e.g., Davis, 1993; Venkatesh, Morris, Davis, & Davis, 2003).

Perceived ease of use (Effort expectancy)

* Is the new technology easy to learn and remember how to use?
* Is the new technology easy to understand and interact with?
* Is the new technology flexible and possible to use for all workers?
* Overall, is the new technology perceived as easy to use?

As mentioned, it is not enough that the users believe the technology to be useful, it will not be accepted unless they also believe the technology to be easy to use (e.g., Davis, 1993; Venkatesh et al., 2003). The technology should therefore have been developed on human terms...

Inclusiveness

* Can the new technology be used independent of size and strength?
* Can the new technology be used independent of age?

As an extension of usefulness, it is extremely important to take into account that people differ and the technology must therefore be inclusive, i.e. suited for all workers, despite gender, age, height etc.

Facilitating conditions

* Will the users have the resources necessary to use the system?
* Will the users have the competence/knowledge needed to use the technology?
* Will the users get appropriate support if they do not know how to use the technology?
* Will the users get appropriate support if the technology fails to work?
* Is the technology compatible with other technologies or systems used at the workplace?

Organizations can spend a lot of money on developing and implementing new technology but much less is spent on educating the personnel who will use it *how* to use the technology. It is therefore important to consider these types of questions, at an early stage, and make sure that an organizational and technical infrastructure exists to support use of the new technology (e.g., Venkatesh et al., 2003).

Participation

* Can the employees be involved in the decision to implement the new technology?
* If not, can the employees be involved in the implementation?
* Are there forums for the employees to raise questions about the new technology?

A good way to get the employees to accept changes in the organization is to let those who are affected by the change to be part in the process (e.g., Beer 1988, read in Hughes et al., 2015). Of course, it is not always possible for the employees to be involved in the decision, though they might be able to influence certain aspects within given frames.

Social influence

* Are the user groups/employees positive towards using new technology?
* Are the user groups/employees positive towards changes at work?
* Is the implementation supported by the managers in the organization?

The opinions of colleagues, managers, supervisors, family and friends are important when an individual user is forming an intention to use new technology. This is especially true in mandatory settings, i.e. when using the technology is not optional (e.g. Venkatesh et al., 2003). The influence of others' opinions tends to be highest in the early stages of experience with the technique, before the individual has had time to form their own opinion. Also, workers are influenced by the management and therefore, managers must communicate support and believe in the system. This means that acceptance of the technology must permeate the entire organization.

Implementation plan

* Is there a clear plan that clarifies *who, what, when, where* and *how* the implementation of the technology should take place?
* Is the plan communicated to everybody in the organization?

A thorough plan increases the chances of a successful implementation. The plan should for example include timelines, key deliverables, and who is responsible for what (Beer, 1988, read in Hughes et al., 2015). Because employees that are satisfied with the current situation are less willing to change and because people often resist change, it might be a good idea to also include planned actions for how to handle possible resistance and increase dissatisfaction if necessary. It is also important to make sure that the plan is communicated to all affected parties in the organization.

Perceived justice

* Can an uneven access to technology and information be justified?
* Is the use of information provided by the technology restricted?
* How the information is used is clearly described

Voluntariness of use

* *The technology is not compulsory to use, there are other ways.*
* *The technology is compulsory to use.*

Privacy concerns (Intrusiveness)

* Is there any risk that the new technology can be intrusive?

Perceived need for change

* The pre-existing technology is/was not satisfying.
* The workers were not satisfied with how it was before.
* There was an expressed need of new tools, functions or ways to work that could be met or simplified with the technology.

Perceived ability (Self-efficacy)

* The users feel confident in how to use the technology.
* The users feel confident that they will know how to use the technology.

Personal demands

Trust

**See also**

**References**

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