



THE USE OF SELF-TRACKING DEVICES IN E-COMMERCE MANAGEMENT

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ABSTRACT

Self-tracking devices and applications are no longer limited to personal fitness; they increasingly form part of digital management infrastructures in e-commerce. This paper examines how self-tracking can support the management of electronic stores by improving employee productivity, strengthening work organisation, supporting employee well-being, and creating richer inputs for customer experience personalisation. The study extends the original manuscript through a literature-based synthesis, a structured expert interview, and a criteria-based assessment of wearables, fitness bands and productivity applications derived from the diploma thesis. The findings indicate that the most realistic managerial applications are not universal surveillance systems, but purpose-limited tools for time management, task planning, workload transparency, voluntary health support and data-informed service design. The paper also discusses risks related to personal data protection, data quality, and a reductionist interpretation of productivity and employee acceptance. A staged implementation framework is proposed for e-commerce managers: define objectives, select suitable technologies, track only necessary indicators, analyse the data in context, introduce improvements, and continuously review legal and ethical safeguards.



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1. INTRODUCTION

Digital transformation has changed the way electronic stores are managed, measured and improved. E-commerce managers work with a continuous flow of information from web analytics, order management systems, customer relationship management platforms, logistics systems and digital marketing tools. These systems make online retail more measurable, but they also create a practical problem: managers have more data than ever before, while the human work behind

marketing, fulfilment, customer service and platform maintenance remains difficult to observe in a balanced and ethical way. Self-tracking technologies, including wearable devices, mobile applications and productivity software, offer one possible response to this challenge because they can translate selected aspects of work, health, movement and digital behaviour into structured data that can be reviewed over time (Lupton, 2016; Rapp & Cena, 2016).

In its original sense, self-tracking refers to the deliberate collection and analysis of data about oneself. It is

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associated with the Quantified Self movement and with the broader idea of self-knowledge through numbers (Nafus & Sherman, 2014; Quantified Self, 2022). In everyday life, users may record steps, heart rate, sleep, location, screen time, diet, mood or completed tasks. In a business context, however, the same technologies raise a more complex managerial question: how can the data be used to improve performance without reducing employees to numbers or turning e-commerce management into constant surveillance? This question is especially relevant for online businesses where work is often hybrid, project-based, deadline-driven and highly dependent on digital tools.

The topic is relevant to e-commerce for three reasons. First, online stores compete through speed, trust, personalisation and operational reliability. Research on e-commerce trust and business patterns shows that website quality, service reliability, data-driven segmentation and the ability to adapt to changing customer behaviour remain central managerial concerns (Agarwal & Srivastava, 2021; Snehathatha et al., 2023; Zelalem, 2021). Second, e-commerce organisations frequently operate with small teams across marketing, content, customer support, warehousing, and analytics, where employee productivity and task transparency are important for pricing, planning, and client reporting. Third, e-commerce management increasingly requires sustainable human resource practices because overwork, distractions, sedentary work and blurred boundaries between office and home office can reduce both performance and well-being (Beno & Caganova, 2024; Janoskova et al., 2020).

The preliminary version of this article provided a general overview of self-tracking devices in e-commerce management. To meet the journal's minimum length requirement and to strengthen the scientific contribution, the manuscript has been substantially expanded. The revised paper draws on the diploma thesis by Jeleň (2022), which analysed self-tracking technologies, reviewed the market for devices and applications, conducted a structured interview with an e-commerce manager, and proposed practical recommendations for implementation in electronic store management. Instead of presenting unsupported survey claims, the revised manuscript is framed as an exploratory, literature-based, and qualitative study that connects existing research with the empirical and comparative material in the thesis.

The aim of this paper is therefore to examine the potential and impacts of self-tracking technologies on e-commerce management, with particular attention to employee productivity, work organisation, employee well-being, customer experience personalisation and data governance. The paper does not argue that every e-commerce company should monitor employees or customers more intensively. Rather, it proposes that self-tracking can create value when it is voluntary or clearly justified, purpose-limited, proportionate, legally

compliant and linked to managerial decisions that employees and customers can understand.

The contribution of the article is threefold. First, it clarifies how self-tracking differs from general business analytics by focusing on data generated through individual behaviour, devices and applications. Second, it identifies concrete e-commerce use cases, including time tracking for project costing, workload transparency, health-oriented employee support and customer journey optimisation. Third, it presents an implementation framework for managers who wish to use self-tracking while respecting privacy, data security, data quality and employee acceptance.

2. LITERATURE REVIEW

2.1 Conceptual foundations of self-tracking

Self-tracking can be understood as a reflexive practice in which individuals collect data about their activities, bodies, emotions, environments or work routines and then interpret these data to support self-knowledge and improvement (Lupton, 2018). The concept overlaps with personal informatics, lifelogging and quantified-self practices. Personal informatics emphasises the collection and reflection stages through which users transform raw traces into meaningful knowledge (Li, Dey & Forlizzi, 2011). Lifelogging focuses on the broader recording of life experiences through sensors, images and digital records (Gurrin et al., 2014). Quantified Self refers both to a community of users and to a cultural orientation toward using numbers to understand everyday life (Nafus & Sherman, 2014).

The diploma thesis used in this article defines self-tracking as the purposeful collection of data about oneself, one's behaviour, and the factors that influence daily life (Jeleň, 2022). This definition is important for e-commerce management because it distinguishes self-tracking from ordinary managerial reporting. A sales dashboard may show revenue, conversion rate, or abandoned carts, but self-tracking concerns data associated with individuals: the time spent on a task, the employee's movement and breaks, the use of work applications, or the customer's interaction with a mobile device or a wearable-enabled service. The managerial value of such data depends less on the mere act of collecting it and more on the ability to interpret it responsibly.

Self-tracking has several strategic forms. The individual initiates personal self-tracking, which is usually connected with self-improvement, curiosity, or health goals. Pushed self-tracking is encouraged by an organisation, insurer, employer or service provider through incentives, reminders or programme rules. Shared self-tracking involves comparison and cooperation in groups, for example, team step challenges or community dashboards. Involuntary self-tracking

appears when individuals have little meaningful choice regarding the monitoring. Exploited self-tracking occurs when data collected by individuals is used primarily for the benefit of third parties, such as advertisers or platform operators (Lupton, 2016; Jeleň, 2022). These distinctions are crucial for business use because the same device can be perceived as supportive in one context and intrusive in another.

2.2 Self-tracking technologies and device categories

Self-tracking technologies vary from simple manual records to advanced wearable sensors. Jeleň (2022) classifies self-tracking devices into five broad categories: portable or software devices, wearable devices, placeable devices, consumable devices and implantable devices. Portable or software devices include smartphones, web applications, spreadsheets and productivity applications. Wearables include smartwatches, fitness bands, hearables, smart rings and smart clothing. Placeable devices are installed in a specific environment, such as counters in retail spaces or sensors in workplaces. Consumable and implantable devices are more specialised and are currently more common in medical or experimental contexts.

For e-commerce management, the most practical categories are portable software and wearables. Software tools such as Toggl, RescueTime, or project management modules can track time spent on tasks, projects, and applications. Wearables such as smartwatches and fitness bands can monitor steps, sedentary time, heart rate, sleep, and sports activities. These tools are technically attractive because they can provide longitudinal data with little manual effort, yet sensor accuracy, user compliance, interpretation problems and the risk of over-quantification also limit them. Rapp and Cena (2016) show that users without prior self-tracking experience often need time to make sense of their personal data, suggesting that managerial implementation should include explanation and feedback rather than simply deploying devices.

The market context also matters. The diploma thesis reviewed the growth of wearable devices in Slovakia and internationally and showed that smartwatches and fitness bands had become common consumer technologies by 2021 and 2022 (Jeleň, 2022). This widespread availability lowers the entry barrier for small and medium-sized e-commerce companies. At the same time, consumer availability should not be confused with organisational readiness. A device that is useful for an individual runner may not automatically be suitable for monitoring work productivity or employee well-being. Managers must therefore evaluate devices and applications based on purpose, compatibility, battery life, connectivity, price, data export, user experience, and the sensitivity of the collected data.

2.3 E-commerce management and data-driven work

E-commerce management includes planning, organising, leading and controlling online business activities. It covers website development, product presentation, online marketing, search engine optimisation, customer communication, order processing, logistics, returns and performance reporting. Because electronic stores operate through digital interfaces, they naturally generate a large amount of data. Studies on e-commerce in the Visegrad region and on digital enterprise development show that digital capabilities increasingly influence competitiveness, especially for small and medium-sized enterprises (Fedorko & Kizák, 2024; Mondal et al., 2022).

Self-tracking can complement existing management information systems in three areas. The first area is internal productivity. E-commerce teams often work on campaigns, product pages, graphic assets, keyword analysis, social media content, and customer requests. Time-tracking applications can help managers understand how much effort is required for repeated tasks and how to set prices or deadlines. The second area is employee well-being. Many e-commerce activities are sedentary and screen-intensive. Wearables can support breaks, movement and sports activities, particularly when participation is voluntary, and the organisation does not access sensitive health data. The third area is customer experience. Wearable or mobile data, when collected lawfully and with consent, can support segmentation, personalisation and omnichannel service design, especially where online and offline interactions are combined.

These uses are linked to business value, but they differ in ethical intensity. Time tracking for project costing may be acceptable when employees know what is recorded and why. Voluntary step challenges may strengthen team motivation when results are not used for performance sanctions. Customer movement tracking or the use of physiological data is more sensitive and requires stricter legal and ethical scrutiny. Therefore, the managerial problem is not whether self-tracking is useful in general, but which form of self-tracking is proportionate to a defined purpose.

2.4 Productivity, well-being and employee engagement

The promise of self-tracking in the workplace is that feedback can help people recognise patterns that would otherwise remain invisible. A worker may discover that certain types of tasks take longer than expected, that interruptions are concentrated at a specific time of day, or that a lack of breaks coincides with reduced concentration. At the team level, managers may identify overloaded projects, unrealistic deadlines or processes

that repeatedly consume more time than planned. In e-commerce, where agencies and online stores often bill clients by the hour, task, or output, this information can directly influence costing and profitability.

However, productivity should not be reduced to time alone. Maltseva (2020) warns that wearables in the workplace may create a reductionist view of work when complex activities are evaluated through narrow metrics. Minutes, clicks, or physiological indicators cannot fully assess creative tasks, customer service quality, problem-solving, and relationship-building. In addition, employees may feel that monitoring undermines trust if the purpose is not clear. The literature on e-work also shows that digital devices can both support productivity and create distractions, so measurement systems should help employees manage attention rather than merely intensify control (Beno & Caganova, 2024).

From a management perspective, the most useful approach is to combine quantitative indicators with qualitative interpretation. Time records, application use and task completion data can be discussed during project reviews. Wearable data can be used in an aggregated or individual voluntary form to support well-being initiatives. Employees should participate in defining what is meaningful to measure. This participatory approach reduces resistance and helps prevent the dehumanising effect that can occur when physiological or behavioural data are treated as objective truth without context.

2.5 Customer experience personalisation

E-commerce personalisation is often based on transaction histories, browsing behaviour, customer profiles and campaign responses. Self-tracking adds another possible layer: data generated by individual devices or applications. In retail, location data, movement patterns, loyalty applications and wearable-enabled services may reveal preferences and contexts that are not visible in transaction records alone. Customer segmentation research shows that data mining and clustering can support more precise profiling in e-commerce (Snehalatha, Mohana Kumar & Kachroo, 2023). Trust research, however, shows that customers are sensitive to security, reputation, website quality and perceived risk (Zelalem, 2021).

For this reason, customer-oriented self-tracking must be approached more cautiously than internal productivity tracking. A company may use voluntarily provided fitness or lifestyle data for a loyalty programme, provided the value exchange is transparent and lawful. A retailer may analyse movement in a physical store connected to an online account, but only if customers understand the purpose and can exercise their rights. E-commerce managers should avoid hidden tracking or excessive personalisation that could be perceived as manipulative.

The managerial objective should be better relevance and service quality, not uncontrolled behavioural extraction.

2.6 Privacy, ethics and regulation

The most important constraint on self-tracking in e-commerce management is personal data protection. The General Data Protection Regulation requires lawful, fair and transparent processing, purpose limitation, data minimisation, accuracy, storage limitation, integrity and confidentiality (European Parliament and Council, 2016). These principles apply strongly when self-tracking involves employees or identifiable customers. Health-related, location, and behavioural data can be sensitive, even when collected by consumer devices. Managers, therefore, need a governance model that clarifies what data are collected, who has access to them, how long they are retained, how they are secured, and how individuals can object or withdraw consent.

Ethical risks are not limited to legal compliance. Wearable and productivity data can be inaccurate or incomplete. A smartwatch may misclassify activity; a time tracker may record time while a user is distracted; a productivity score may treat research or communication as unproductive because it does not fit a predefined category. If such data are used for evaluation or sanctions, employees may adapt their behaviour to the metric rather than to the organisation's real goals. The literature therefore recommends openness, critical reflection, employee involvement, and limiting the handling of highly sensitive data (Maltseva, 2020).

3. METHODOLOGY

3.1 Research design

The revised article uses an exploratory qualitative and analytical design. The purpose is not to test a statistical hypothesis on a representative sample, but to synthesise literature and thesis-based evidence into a practical framework for e-commerce managers. The research design combines three sources of evidence: scholarly literature on self-tracking, personal informatics, workplace wearables and e-commerce; the diploma thesis by Jeleň (2022); and the original article's thematic focus on productivity, customer experience and marketing personalisation.

The choice of this design is directly in response to the editorial screening. The earlier manuscript contained claims about questionnaire results that were not sufficiently substantiated by the provided thesis. In the revised version, these claims were removed. The study now clearly reflects the available evidence: a structured expert interview, a market and device analysis, and a criteria-based comparison of selected tools. This makes the manuscript more transparent and reduces the risk of presenting unsupported quantitative findings.

3.2 Use of the diploma thesis as a source

The diploma thesis titled "Proposal for the use of self-tracking devices in e-commerce management" provides the empirical and practical foundation for the revised paper. It defines basic concepts, reviews self-tracking strategies, classifies devices, analyses the wearables market, discusses implementation challenges, and presents a practical study based on a structured interview with an e-commerce manager (Jeleň, 2022). It also compares selected smartwatches, fitness bands and productivity applications using criteria and pairwise comparison. These elements were used to expand the article's theoretical background, methodology and results.

The thesis material was not copied mechanically. It was condensed, paraphrased and reorganised for the format of a scientific article. The article, therefore, treats the thesis as a cited source of evidence and uses it to support a more focused argument about e-commerce management. Where the thesis provided specific findings, such as the use of Toggl, Perfex, and wearable devices in a marketing-oriented e-commerce environment, the article presents them as qualitative case evidence rather than generalisable survey results.

3.3 Structured interview evidence

A central empirical element of the thesis was a structured interview with the manager and managing director of High5 studio s.r.o., a marketing agency that supports small and medium-sized businesses through online and offline marketing, Google campaigns, search engine optimisation, social media advertising, web creation, analyses and graphic work (Jeleň, 2022). The interview explored the use of self-tracking applications, time management systems, and wearable devices in managerial practice. It is relevant to e-commerce because the agency environment involves project-based digital work similar to that of many online stores and e-commerce service providers.

The interview covered the duration and purpose of self-tracking, the influence of the COVID-19 home office period, monitored parameters, frequency of use, perceived benefits and barriers, data security concerns, the interpretability of collected data, and future interests, such as eye-tracking for website analysis. The interviewee reported using the Perfex information system for communication, tasks, and project time recording; Toggl for time measurement by some employees; and Zepp-connected smartwatches for voluntary health- and sport-related self-tracking. The company also supported employee physical activity through sports benefits and organised badminton activities (Jeleň, 2022).

3.4 Criteria-based assessment of technologies

The thesis compared three categories of tools relevant for e-commerce management: smartwatches, fitness bands and productivity applications. For smartwatches, criteria included compatibility, battery life, internal storage, connectivity, display size, weight, health functions, safety functions, heart-rate measurement, smart functions, NFC, GPS, calling, notifications and price. For fitness bands, criteria included compatibility, battery life, connectivity, size, display, weight, health functions, sport functions, heart-rate measurement, NFC, GPS, notifications, water resistance and price. For productivity applications, criteria included time tracking, project management, distraction monitoring, productivity reporting, integration, compatibility and price (Jeleň, 2022).

The comparison used a pairwise assessment and a Likert-type scale for functionality. The results identified Apple Watch Series 7 as the most suitable smartwatch among the compared models, Xiaomi Mi Band 5 as the most suitable fitness band, and Toggl as the most suitable productivity application for the analysed managerial purpose (Jeleň, 2022). In this article, these results are interpreted not as universal rankings valid for all organisations, but as examples of how managers can evaluate technologies according to their own priorities.

3.5 Ethical approach and limitations

Ethical considerations guide the research approach. Employee self-tracking should be based on informed participation, clear purpose, proportionality and data minimisation. Customer-related self-tracking should be based on lawful processing, transparency and respect for user rights. The main limitation of the study is its exploratory nature. The structured interview represents a practical case and cannot be generalised statistically to all e-commerce companies. The device comparison is also time-sensitive because wearable models, prices and software functions change rapidly. Nevertheless, the case and comparison provide useful managerial insights by showing how self-tracking is implemented, accepted, and interpreted in practice.

4. RESULTS AND DISCUSSION

4.1 Managerial use cases identified from the thesis and literature

The synthesis identifies four primary use cases for self-tracking in e-commerce management. The first is time and task management. E-commerce work consists of both recurring and project-based tasks, including product uploads, campaign preparation, graphic design, keyword analysis, customer communication, platform maintenance, and reporting. Time-tracking tools can

show how long these tasks take, whether deadlines are realistic and how future projects should be priced. In the case study, the manager used time records to determine the actual effort spent on client projects and to compare expected and actual hours (Jeleň, 2022).

The second use case is workload transparency and operational planning. Managers often need to know who worked on a project, when a task was completed and which activities caused delays. When properly implemented, time-tracking software can reduce unnecessary calls and messages by making project status visible in the system. This was especially useful during the home office period, when physical supervision was impossible, and the manager needed reliable information about ongoing work (Jeleň, 2022). For e-commerce companies, similar transparency may support remote customer support, content, and marketing teams.

The third use case is support for employee well-being and physical activity. Wearables can remind employees to move, record physical activity, and support awareness of sleep, stress, and heart rate. In the case described by Jeleň (2022), the company bought smartwatches, used Zepp for health-related self-tracking and combined the initiative with sport benefits. Importantly, the health data were not shared with the employer as a control mechanism. This distinction is important: the managerial value was in supporting a healthier work culture, not in collecting sensitive health records for performance evaluation.

The fourth use case is customer experience research and personalisation. The interviewee expressed interest in future technology that would track user attention on web pages using camera-based eye-tracking and mouse behaviour. This type of self-tracking-related usability research could help identify which elements of a website attract attention, which calls to action are effective and how page layouts should be arranged (Jeleň, 2022). Such tools can support conversion optimisation, but they also require clear consent and careful anonymisation when real users are involved.

4.2 Internal productivity: from measurement to managerial learning

The most direct finding is that self-tracking can improve managerial learning about work processes. In the interview, time tracking revealed that some clients received more hours of work than initially agreed and that some projects required a better pricing basis. This demonstrates a practical link between self-tracking and e-commerce profitability. If an online store or agency does not know how long recurring work takes, it may underprice services, overload employees, or accept deadlines that cannot be met without overtime.

Toggl was evaluated as the most suitable of the compared productivity tools because it supports time tracking, project management, and distraction-related functions, and offers better integration and compatibility for the defined use case than RescueTime (Jeleň, 2022). Toggl is useful when the managerial goal is to record time against clients, projects and tasks. RescueTime, by contrast, is stronger for automatic analysis of digital habits and productivity reports, but it may be less suitable when detailed project allocation is required. This illustrates that the correct tool depends on the managerial problem.

The results also show that measurement creates new work. Employees must remember to start, stop or switch timers. In multitasking environments, the accuracy of time records can decline. The interviewee described situations in which employees forgot to stop timers or had difficulty switching between tasks, requiring later correction (Jeleň, 2022). This finding is important because the cost of self-tracking is not only financial. It includes cognitive effort, discipline, and the risk that employees spend time managing the measurement system rather than doing the work.

For e-commerce managers, the practical implication is to simplify measurement rules. A company should define when tracking is required, which categories to use, how breaks are recorded, and how corrections are made. The goal should be useful project knowledge, not perfect surveillance. Monthly reviews can focus on patterns rather than individual blame: tasks that repeatedly exceed estimates, clients that require more support than expected, or processes that need automation.

4.3 Wearables and employee well-being

Wearables are relevant to e-commerce because many digital employees work in sedentary conditions. Long periods at a computer may increase physical inactivity, eye strain and fatigue. Smartwatches and fitness bands can provide reminders, step goals and activity records. In the thesis case, employees were encouraged to reach daily step goals, and some increased their targets from 7,500 to 10,000 steps (Jeleň, 2022). The social element of comparing or discussing results can strengthen motivation when it remains voluntary.

The comparison of smartwatches selected the Apple Watch Series 7 as the best option among the analysed models, mainly because of its rich health, safety, smart, and notification features. However, the thesis also identified disadvantages, such as higher prices, iOS dependence, and shorter battery life (Jeleň, 2022). From a managerial perspective, this means that the highest-scoring device is not automatically the best organisational purchase. A company with employees using Android devices may prefer a more compatible and less expensive alternative. The evaluation method is more important than the specific result.

The comparison of fitness bands selected Xiaomi Mi Band 5 as the most suitable option among the compared bands (Jeleň, 2022). Fitness bands can be attractive for companies because they are cheaper, lighter and often have longer battery life than smartwatches. They may be sufficient for step goals, sports activities, heart rate monitoring, and reminders. This makes them suitable for well-being programmes where the company wants to support movement without introducing more complex smart functions such as calls, payments or extensive application ecosystems.

The ethical boundary is clear. Health-related wearable data should not be used to rank employees, infer medical conditions or make employment decisions. Aggregated participation statistics or voluntary individual goals are safer than manager-accessible physiological dashboards. Employees should also be able to participate in wellness activities without sharing device data. This approach supports well-being while reducing the risk of discrimination, pressure or loss of trust.

4.4 Customer experience and marketing personalisation

Self-tracking can contribute to personalising the customer experience in two ways. First, data generated by customers through applications, loyalty programmes or devices can help companies understand contexts of use. Second, self-tracking-inspired research methods, such as usability testing, eye-tracking and interaction logging, can show how customers navigate a website or application. The thesis case identified interest in analysing user attention on websites to optimise element placement and calls to action (Jeleň, 2022).

For e-commerce managers, such data is valuable because conversion depends on the customer's ability to find, understand and trust the online offer. If users do not notice a key product benefit, delivery condition or call-to-action button, the website may lose sales even when the product is competitive. Data from interaction tracking can therefore support design decisions. This connects self-tracking with management information systems: individual-level traces serve as inputs to improve the digital service environment.

At the same time, customer tracking is highly sensitive. Customers may accept personalisation when it produces relevant recommendations, easier purchasing or loyalty benefits, but they may reject it when it feels hidden, excessive or manipulative. Trust is a precondition of online purchasing (Zelalem, 2021). Therefore, customer-oriented self-tracking should be built around consent, clear value, privacy-by-design and the possibility to opt out. E-commerce managers should prioritise aggregated usability insights and anonymised behavioural patterns whenever individual identification is unnecessary.

4.5 Implementation framework for e-commerce managers

Based on the literature and thesis findings, this paper proposes a six-stage implementation framework. The first stage is objective definition. Managers should specify whether the goal is project costing, workload transparency, employee well-being, customer experience research or marketing personalisation. Without a defined purpose, self-tracking generates data without managerial meaning and increases privacy risks.

The second stage is indicator selection. Each objective should be translated into a small number of indicators. For project costing, relevant indicators may include task time, project time, employee role and client category. For well-being, indicators may include voluntary step goals or participation in sports activities. For usability research, indicators may include click paths, attention areas or time to complete a task. The principle of data minimisation requires managers to avoid collecting indicators that are merely interesting but not necessary.

The third stage is technology selection. Tools should be compared against criteria such as compatibility, cost, ease of use, battery life, data export, integration, reporting, security and sensitivity of the data collected. The pairwise comparison used in the diploma thesis is one possible method for making this selection more transparent (Jeleň, 2022). Managers can adapt the criteria to their own context and include employees in the weighting process.

The fourth stage is participatory implementation. Employees should know what is being tracked, why it is being tracked, who sees the data, and how the data will be used. Training should focus on the correct use, interpretation and correction of errors. In the case of the thesis, some resistance and practical mistakes emerged because time tracking required new habits (Jeleň, 2022). Participation reduces resistance and improves data quality.

The fifth stage is contextual analysis. Self-tracking data should be interpreted alongside project complexity, customer requirements, team capacity, and qualitative feedback. A long task duration may indicate inefficiency, but it may also indicate unclear requirements, missing resources or a difficult client. A low step count may indicate workload pressure rather than lack of motivation. Context prevents misuse of numbers.

The sixth stage is continuous control and improvement. Managers should review whether the system still serves its purpose, whether employees accept it, whether the data are accurate enough, and whether the legal safeguards remain adequate. If a tool no longer produces useful insights or creates disproportionate pressure, it should be adjusted or discontinued. This reflects the define-track-analyse-improve-control logic described in

the thesis and in personal informatics research (Jeleň, 2022; Li, Dey & Forlizzi, 2011).

4.6 Risks and safeguards

The first risk is a lack of meaningful insight. Data collection does not automatically produce knowledge. Managers may receive dashboards, graphs and scores without understanding what they mean. This can lead to misguided decisions and loss of credibility. The safeguard is to connect each metric to a managerial question before data collection begins.

The second risk is reductionism. E-commerce work includes creativity, empathy, technical problem solving and customer relationship management. These qualities cannot be fully measured through time or activity data. The safeguard is to use self-tracking as one input among several, not as the sole basis of evaluation.

The third risk is employee resistance. Even a useful tool can be rejected if employees perceive it as a form of hidden control. The safeguards are transparency, consent where appropriate, employee participation, and clear separation between wellness data and performance evaluation. The case study shows that employees may accept tracking when its purpose is explained, and sensitive health data are not shared with management (Jeleň, 2022).

The fourth risk is data security and legal non-compliance. Self-tracking data can include personal, behavioural, location or health-related information. The safeguard is a governance policy covering lawful basis, access rights, retention periods, security measures, processors, deletion and individual rights. For customer data, the organisation should also ensure that tracking practices are reflected in privacy notices, cookie or consent mechanisms and internal processing records.

The fifth risk is return on investment. Wearables, licences, and implementation time all incur costs. The safeguard is pilot testing. A small pilot can determine whether time tracking improves project costing, whether wearable-based wellness initiatives increase engagement, or whether usability tracking improves conversion. Only tools with demonstrable managerial value should be scaled.

4.7 Implications for competitiveness and digital transformation

When implemented responsibly, self-tracking supports digital transformation in e-commerce by improving the connection between human activity and managerial information systems. It helps managers understand not only what the business results are, but also how work processes and customer interactions produce those results. This is valuable for small and medium-sized e-commerce firms because they often have limited

resources and need accurate information for pricing, staffing and process improvement.

The findings also show that self-tracking can support sustainability in management. A company that monitors only sales may overlook employee overload. A company that monitors only employee time may overlook customer trust and service quality. A balanced self-tracking strategy connects productivity, well-being, and customer value. This balance is essential for long-term competitiveness in the digital economy.

The managerial implication is that self-tracking should be treated as a socio-technical system. The device or application is only one element. Equally important are goals, rules, interpretation, organisational culture and trust. E-commerce managers who understand this broader system are more likely to benefit from self-tracking than managers who simply buy devices or install monitoring software.

5. CONCLUSION

The use of self-tracking devices in e-commerce management represents both a significant opportunity and a managerial responsibility. The revised article shows that self-tracking can support project costing, task planning, transparency into workload, employee well-being, and customer experience research. These applications are particularly relevant in e-commerce because online business is highly data-driven, digitally mediated and dependent on both technological efficiency and human performance.

Drawing on the diploma thesis by Jeleň (2022), the paper replaced unsupported quantitative claims with a clearer exploratory design based on literature synthesis, structured interview evidence and criteria-based technology assessment. The thesis-based case showed that self-tracking is already used in practice through systems such as Perfex, Toggl and wearable devices connected to health applications. It also showed that the benefits of self-tracking depend on careful implementation: employees need clear rules, managers need meaningful indicators and sensitive data must be protected.

The main contribution of the paper is the implementation framework for e-commerce managers. The proposed stages are: define objectives, select indicators, choose suitable technologies, implement in a participatory manner, analyse data in context, and continuously review safeguards. This framework can help companies avoid the most common mistakes: collecting too much data, using metrics without context, ignoring employee acceptance and treating consumer-grade devices as if they produced perfect managerial truth.

The paper also emphasises that self-tracking should not be understood as a universal surveillance solution. Its value lies in purpose-limited and ethically governed use. Time-tracking tools can improve project estimates and pricing; wearable devices can support voluntary well-being; usability-oriented tracking can improve customer experience. However, these benefits can be realised only if privacy, transparency, data minimisation and human judgement remain central.

Future research should test the proposed framework in a larger sample of e-commerce firms and compare outcomes across different organisational contexts, such

as online retail, marketing agencies, logistics-oriented e-commerce and platform-based services. Longitudinal studies could examine whether self-tracking improves productivity and well-being over time, or whether initial motivation declines. Further research should also explore customer acceptance of wearable-enabled personalisation and the legal boundaries of behavioural data use in digital commerce.

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